

## Sequence

-----

5 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 atgaaaagac ttcacaagag gttcctctta gctacgtttt gcgcgttatt aacagcaact 60  
 ctccaggccg cccgatgtcac tatcactgtt aatggctcgg tagtcgctaa accctgcact 120  
 attcaaacca aagaagctaa cgttaatctc ggggatcttt atacgcgcaa tctgcaacaa 180  
 cctgggtctg catctggctg gcacaatatt actttgtcat taaccgattg tccggctgaa 240  
 10 acaagtgcag tgacggcaat cgtgacaggt tcaactgaca atacgggtta ttacaaaaat 300  
 gaaggctactg ccgaaaaatat tcagatagag cttagggatg accaggatgc gacgttaaaa 360  
 aatggcgata gcaaaacggg tattgttgat gagatcactc gtaatgcaca gtttccactt 420  
 aaggcaagag ctatcacggg gaatggaaac gcaagccagg gaacgatcga ggcgctaatac 480  
 aatgtgatct acacctggca ataa 504  
 15 <212> Type : DNA  
 <211> Length : 504  
 SequenceName : SEQ ID 431  
 SequenceDescription :

## Sequence

-----

20 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 atgccccga aacttctggg aatagtcctg acaaccctta ttgcgatcag ctcttttgct 60  
 25 tctaccgaga ctttatcggt tactcctgac aacataaatg cggacattag tcttggaact 120  
 ctgagcggaa aaacaaaaga gcgtgtttat ctagccgaag aaggaggccg aaaagtcagt 180  
 caactcgact ggaaattcaa taacgctgca attattaaag gtgcaattaa ttgggatttg 240  
 atgccccaga tatctatcgg ggctgctggc tggacaactc tcggcagccg aggtggcaat 300  
 atggctgatc aggactggat ggattccagt aaccccggaa cctggacgga tgaaagtaga 360  
 30 caccctgata cacaactcaa ttatgccaac gaatttgatc tgaatatcaa aggtggctc 420  
 ctcaacgaac ccaattaccg cctgggactc atggccggat atcaggaaag ccgttatagc 480  
 tttacagcca gaggtggttc ctatatctac agttctgagg agggattcag agatgatatac 540  
 ggctccttcc cgaatggaga aagagcaatc ggctacaaac aacgttttaa aatgccctac 600  
 attggcttga ctggaagtta tcgttatgaa gattttgagc taggtggcac atttaaatac 660  
 35 agcggctggg tggaagcatc tgataacgat gaggactatg acccaggaaa aagaatcact 720  
 tatcgagta aagtcaaaaga ccaaaattac tattctgttt cagtcaatgc aggttattac 780  
 gtaacaccta acgcaaaagt ttatgttgaa ggcacatgga atcgggttac gaataaaaaa 840  
 ggtaataactt catcttatga tcacaatgat aacacttcag actacagcaa aaatgggtgca 900  
 ggcatagaaa actataactt catcactact gctggtctta agtacacctt ttaa 954  
 40  
 <212> Type : DNA  
 <211> Length : 954  
 SequenceName : SEQ ID 432  
 SequenceDescription :

## Sequence

-----

45 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 50 ttgtttttta agcagggaaa gattttgagt gcgggacgcc tgaataaaaa atctctgggt 60  
 atcgtgatgt tggtatcggg tggactgctt ttggcgggct gttcgggtag caaatcatcc 120  
 gatacaggaa cgtattccgg ctccgtttac accgtgaaac ggggggatac gctatatcgt 180  
 atttcgcgca ccacgggaac cagcgtaaaa gagctggcgc gactgaacgg catttcccc 240  
 ccttacacca ttgaagttgg tcagaaacta aaactgggtg gggcgaaaag tagcagtagt 300  
 55 acacgtaaat caaccgcaa atcaacgacc aaaaccgcat cggttacacc gtcacagcg 360  
 gtaccgaaat cttcctggcc gccagtaggg caacgttggt ggttatggcc aacgacaggg 420  
 aaagttatca tgccgtattc gacagcagat ggcggcaata aagggttgga tatctcagct 480  
 ccacggggta caoctattta cgccgcggtt gcaggaaagg tgggtgatgt gggcaaccag 540  
 ctgcgtggct acggtaatct catcatgatt aaacacagtg aagattacat tacggcttac 600  
 60 gcccataatg acacgatgct ggtaataaat gggcaaaagc tgaaggctgg gcaaaaaatc 660  
 gccaccatgg ggagcacgga tgcggcatct gttcgctgc atttccagat tcgttaccgt 720  
 gcaacggcaa ttgatccgct acgttacttg ccgcctcagg gcagcaagcc aaaatgctga 780  
 <212> Type : DNA  
 <211> Length : 780  
 SequenceName : SEQ ID 433  
 SequenceDescription :

## Sequence

-----

5 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 atgcccaacac caaatcctctt ggccaccgtg aaaggggccc ggaccacact gtggggtttat 60  
 aacgggaacg gcgacccata tgcaaacccg ctttcagaca atgactgggc gcgtctggca 120  
 aaggtttaaag acctgacgcc cggcgaaactg accgctgagt cctatgacga cagttatctc 180  
 gatgatgaag atgcggactg ggccgcgacc ggacaggggc agaaatccgc tggagatacc 240  
 10 agcttcacgc tggcgtggat gcccgagagc caggggcagc aggcgctgct ggctgtgttt 300  
 aatgaagggtg ataccctgtc ctataaaatc cgcttccga acggcacggc cgatgtgttc 360  
 cgcggtctggg tcagcagtat cggtaaggcg gtgacggcga aggaagtgat caccgcacg 420  
 gtgaaagtca ccaacgtggg acgtccgtcg atggcagaag atcgacgac ggtaacacgc 480  
 gcaaccggca tgaccgtgac gcctgccagc acctcggtgg tgaaagggca gagcacgacg 540  
 15 ctgaccgtgg cattccagcc ggaaggcgca accgacaaga gcttccgtgc ggtgtctgcg 600  
 gataaaacaa aagccaccgt gtccgtcagt ggtatgacca tcaccgtgaa aggtgtgtct 660  
 gcaggcaagg tcaacattcc ggtcgtatcc ggtaatggtg agtttgcgtc ggttgcagaa 720  
 atcaacgtca ccgccagtta a  
 <212> Type : DNA  
 20 <211> Length : 741  
 SequenceName : SEQ ID 434  
 SequenceDescription :

## Sequence

-----

25 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 atgtctgctt tgtatgaacg ctccacagctg acgcaggtga tgatttcacg tgccccggcg 60  
 actgtctgaaa ctatggataa ggccgaatat ctgcgcctgg actgcacat caaggaagtg 120  
 30 cagttcacgc ccgggcagaa acaggatatt gatgtgacca cgctctgctc cacagagcag 180  
 gagaacatca atggctctggg ggctcgtctc gagatttcca tgcgggcaa tttttatctg 240  
 aatcaggccc agaaccgccc gcgtgatgcc tatgacaatg acgcgttgta tgcgtttaag 300  
 gtgctgtttc cgctccgtaa gggctttaa ttcctggcgg aagtgcgcca gcacacctgg 360  
 tcattccggtg ccaacggcgt ggtggctgca acgttctcac tgcgtctgaa aggcaaaccg 420  
 35 gtgtcctttg tggtaaccgt ggctgtttgt aaaaatctgg ataagacact taccgtgaat 480  
 accggtgcgc tgcctgacaat gtcagtcagt gccaacgggg gaacgcggcc gtataaatac 540  
 gcctggaaga aggatggta cccggttgac gggcagacga cagacacctt cagtaagcca 600  
 ggtgcgcagt ccgctgatgc ggggaaatat acctgtgtgg tgaccgatcc ggagagaaa 660  
 gcacagagtg tgacgtctgt tgaatgcacc gtgacagtga gcgcagccgc cggataa 717  
 40  
 <212> Type : DNA  
 <211> Length : 717  
 SequenceName : SEQ ID 435  
 SequenceDescription :

## Sequence

-----

45 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 atgaaaaaga gcactctggc attagtgggtg atgggcatctg tggcatctgc atccgtacag 60  
 gccgcagaaa tatataacaa agacggtaat aaactggatg tctatggcaa agttaaagcc 120  
 atgcattata tgagtgataa cgacagtaaa gatggcgacc agagttatat ccgttttggg 180  
 tttaaaggcg aaacacaaat taacgatcaa ctgactgggt atggctcgtt ggaagcggag 240  
 tttgcggaa ataaagcgga gagtatact gcacagcaaa aaacgcgtct cgcttttggc 300  
 55 ggattgaagt ataaagattt gggttctttc gactatggcc gtaacctggg cgcgttgtat 360  
 gacgtggaag cctggaccga tatgttcccg gaatttgggt gcgactctc ggccgcagacc 420  
 gacaacttta tgaccaaacg cgccagcggc ctggcgacgt atcggaacac cgactttctc 480  
 ggctgttatcg atggcctgaa cttaacctcg caatatcaag ggaaaaacga aaaccgcgac 540  
 gttaaaaagc aaaacggcga tggcttcggc acgtcattga catatgactt tggcggcagc 600  
 60 gatttcgcca ttagtggggc ctataccaac tcagatcgca ccaacgagca gaacctgcaa 660  
 agccgtggca caggcaagcg tgcagaagct tgggctacag gtctgaaata cgatgccaat 720  
 aatatttatc tggcaacttt ttattctgaa acacgcacaa tgacgccaat aactggcggc 780  
 tttgccata agacacagaa ctttgaagcg gtcgctcaat accagtttga ctttggctctg 840  
 cgtccatcgc tgggttatgt cttatcgaaa gggaaagata ttgaaggtat cggatgatgaa 900  
 65 gatctgggtc attatatcga tgtcggggct acatattatt tcaacaaaaa tatgtcagcg 960  
 tttgttgatt ataaaatcaa ccaactggat agcgataaca aattgaatat taataatgat 1020  
 gatattgtcg cggttggcat gacctatcag ttttaa 1056

<212> Type : DNA  
<211> Length : 1056  
SequenceName : SEQ ID 436  
SequenceDescription :

5  
Sequence  
-----  
<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :

10	atgcggtgtca aacatgcagt agttctactc atgcttattt cgccattaag ttgggctgga	60
	accatgacttt tccagttccg taatccaaac tttgggtgga acccaaataa tggcgctttt	120
	ttattaaata gcgctcaggg ccaaaactct tataaagatc cgagctataa cgatgacttt	180
	ggtattgaaa caccctcagc gttagataac tttactcagg ccatccagtc acaaatttta	240
	ggtggggtac tgtcgaatat taataccggg aaaccggggc gcatggtgac caacgattat	300
15	attggttgata ttgctaaccg cgatgggtcaa ttgcagttga acgtgacaga tcgtaaaacc	360
	ggacaaacct cgaccatcca ggtttcgggt ttacaaaata actcaaccga tttttaa	417

<212> Type : DNA  
<211> Length : 417  
SequenceName : SEQ ID 437  
SequenceDescription :

20  
Sequence  
-----  
<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :

25	atgaaaagaa aagttctggc aatgctgggtc ccggcggtat tagttgctgg cgcagcaa	60
	gcggtgaaa tttataataa agatggcaat aaactggatt tgtacggaaa agtagcgggc	120
	ctgcactact tctctgatga tgctagcagc gatggcgaca tgcatatgc ccgtatcggt	180
30	ttcaaagggtg aaactcagat cgctgaccaa ttcactgggt atggtcagtg ggaatttaac	240
	attggcgcaa acggtcctga aagcgacaag ggtaataccg caacgcgtct ggcatttgca	300
	gggtttcggct ttggtcagaa tggtaactttc gactatgggtc gtaactacgg tgcgtatat	360
	gacgtagaag catggaccga tatgctgccg gaatttggtg gagataccta tgctggcgct	420
	gacaacttca tgaacgggtcg tgctaacagc gtagcaacct atcgtaacaa tgggtttctt	480
35	gggtcaagttg atgggtctgaa ctttgcactc cagtatcagg gtaacaacga gaaaagcgga	540
	ttatttgatc aagaagggtc aggtaacggg aatggacgta aacttgctaa agagaacggc	600
	gacgggttcag tatgtccact tcctatgact ttgactttgg ttttaa	645

<212> Type : DNA  
<211> Length : 645  
SequenceName : SEQ ID 438  
SequenceDescription :

40  
Sequence  
-----  
<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :

45	ttgaacacgg tgactctgga aggaggaacc ttcaataaca acggaacgct taatgacgtc	60
	gtaaaaattg agaaaaacag caacgcggta attaaataaca ccggttcctt gtcaacttta	120
	caacttcacg atggtagcgt gaataacagc ggtattgcgt cggcgcgcggt taacgctcag	180
50	ggcgatgcgg tattcaataa ccttgcaggc ggcgaggcgc gtaaaaggcgc gattctctat	240
	aactctgcgg tagtgaataa cgcgggtacc tggaaaatgg gttatcagga tgaaaacaac	300
	aatgccggga cgctggatat tgacgataag tcaacggttca acaacagcgg caaactcatc	360
	cttgataaca gcaaaaaacgc cattcgcttc cagggcagca atgctaacgc cacgttatat	420
	aacaccgggtg aaatgacgct ggatgccgca ttagggtgcgg gcgctattct ctacgacgat	480
55	ggcgccagcg agtttattaa caaggcggtg gtggatgcga aagtcaccgt ggcggtagt	540
	actgccggtg cgacagaaag cgatgccttc ttgtggaacc aggatggcgg ggtaattaac	600
	ttcgataaag acaacgccag cgcggttaaa ttcaccacaca acaactatgt tgctctcaac	660
	gatggtgtaa tgaacatcag cggcaacaac gcogtggcga tggaaaggcga taaaaacgca	720
	cagctgggtta acaacggcgt tatcaatctc ggtaccgaag gcaccaccga taccggattg	780
60	actgggtatgc aactggatgc caatgccacc gccgatgcgg taattgagaa caacggcacg	840
	atcaatatatt ttgctaacga ctcgtttgcg ttcagcgtag tgggcacaga aggtcatatc	900
	gttaacaacg gtacggtggt gattgccgac ggcgtgactg gttcggggtt gattaagcag	960
	ggcgacagcg tgaatgtgga aggggtgaac ggcaacagcg gtaacaatac cgaagtgcac	1020
	tacaccgact acacgttgcc ggacatgcc aacacttaca ccacttcacc tttcagtgaa	1080
65	acgactgata gcggtagtag cgatggcagc agtaacaacc tcaacggcta tatcgctcgg	1140
	accaacgttg acggcagcgc cggtaaaactg aaggtcaaca acgccagcat gaatggtgtc	1200
	gggatcaaca ccggtttcgc cgcgggtacg gcagacacca cggtcagttt cgacaacgtg	1260

```

5  gtggaaggca tcaacctgac cgacgccgat gccatcacct caacgtccgt ggtatggacc 1320
   gccaaaggca gcaccgatgc cagcgggcaac gttgacgtca tcatgagcaa aaacgcctac 1380
   accgatgtgg cgaccgatgc ttcgggtgaac gatgtggcga aggcactgga tgcgggttac 1440
   accaataacg agctgtatac cagcctgaac gtgggcacca ctgctgaact gaatagcgcc 1500
   ctgaagcagg tgagcggtag ccaggcgacc acgggtattcc gtgaagcgcg tgtgttaagc 1560
   aaccgcttca gcatgctggc ggatggcgcg ccgaagggtgg gcaatggcct ggctttaac 1620
   gtggtggcga aaggtgaccc gcgtgcggaa ctcggaaata acaccgagta tgacatgctg 1680
   gcactgcgta aaaccgttga cctgagcgaa agccagagca tgagcctgga atacgggtatc 1740
   gcgcgtctgg atggcgacgg tgcgcagaaa gcggggcgaca atggcgtaac cggcgggtac 1800
10 agccgcttct ttggcctgaa gcaccagatg tccttcgaca atgggtatgcg ttggaacaac 1860
   gcgctgcggt atgacgtgca taatctcgac agcagccgct cggctcgctta cggcgacgctc 1920
   agcaaaacgg cggatacgga tgtgaaacag cagtacctgg agttgcgtag cgaaggggcg 1980
   aaaacctttg agccgcgcga agggctgaaa atcaccccggt acgccggagt gaaactgctg 2040
   cactcgcttg aagcggtcta tcaggcgcg cacttaacct gagcatgaaac 2100
15 agcggcagcg aaacggcggg ggacagcatc gtccgggtga aactggacta cgcagggaaa 2160
   ggcggctgga gcgcgaatgc gacgctggaa ggcggggcga acctgagcta cagcaagagc 2220
   cagcgacagg caagccttgc aggggcaggg agccagcact ttaacgtcga tgacgggtcag 2280
   aagggcgggc gtatcaacag cctggcgagc gtccggcgta agtacagtag caaagaaagt 2340
   tcgctgaatc tggatgcgta tctactggaa gaggacggca tcagcgacaa aggcgtgatg 2400
20 ctgaacttta agaaaacggt ctaa 2424

```

<212> Type : DNA

<211> Length : 2424

SequenceName : SEQ ID 439

SequenceDescription :

25

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

```

30  atgcttaatg gaattagtaa cgctgcttct aactagggc ggcagcttgt aggtatcgca 60
   agtcgagtga gctctgcggg gggaactgga tttctgtag cccctcaggc cgtgcgtctt 120
   actccggtga aagttcattc ccttttttct ccaggctcgt cgaatgttaa tgcgagaacg 180
   atttttaatg tgagcagcca ggtgacttca tttactccct ctgctccggc accgcgcgca 240
   ccgacaagtg gacagggcat cggggcatcc cgacctttac cgccatttgc acaggcatta 300
35  aaagagcact tggctgccta tgaataatcg aaaggctcct aggccttagg ttttaagccc 360
   gcccgctcagg caccgcgcgc accgacaagt ggacaggcat ccggggcatc ccgaccttta 420
   ccgcccattg cacaggcatt aaaagagcac ttggctgcct atgaaaaatc gaaaggctct 480
   gaggcttttag gttttaagcc cgcccgctcag gcaccgcgcg caccgacaag tggacaggca 540
   tccggggcat cccgaccttt accgcccatt gcacaggcat taaaagagca cttggctgcc 600
40  tatgaaaaat cgaaaggctc tgaggcttta ggttttaagc ccgcccgtca ggcaccaccg 660
   ccaccgacag ggcctagtgg actaccgccc cttgcacagg cattaataaga tcatttagct 720
   gcctatgagc aatcgaagaa agggtaa 747

```

<212> Type : DNA

<211> Length : 747

45

SequenceName : SEQ ID 440

SequenceDescription :

Sequence

-----

50 <213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

```

   atgaacaaga agattcattc cctggccttg ttggtcaatc tggggattta tggggtagcg 60
   caggcacaag agccgaccga tactcctggt tcacatgacg atactattgt cgttaccgcc 120
   gccagcgaga acttacaggc gcttggcggt tcgacctatca ccgcagatga aatccgcaaa 180
55  aaccccggtt cccgcgatgt ttcggagatc atccgtacca tgccaggcgt taacctgacc 240
   ggtaactcca ccagtggtoa gcgagggaat aaccgacaga ttgatattcg cggtatgggt 300
   ccggaaaaca cgctgatttt gattgacggc aagccggtaa gcagccgtaa ctcggtgcgt 360
   cagggtctgg gtggcgagcg cgatacccggt ggtgatacct cctgggtgcc acctgaaatg 420
   attgaacgta ttgaagttct gcgtggctcg gcagctgcgc gttatggcaa cggcgcgggc 480
60  ggcggcggtg ttaacatcat taccaaaaaa ggcagcgggc agtggcacgg ctccctgggac 540
   gcataatttca atgcgccaga acataaagag gaagggtgcc ccaaacgcac taactttagc 600
   ctgaccggtc cgttggcgca cgaattcagc ttccgcttgt atggcaacct cgacaaaacc 660
   caggctgacg cgtgggatat caaccagggt catcagtcgg cgogtgccgg aacgtatgcc 720
   acgacgttac cagccggggc cgaaggggtg atcaataaag atattaatgg cgtggtgcgc 780
65  tgggacttgc caccattgca atcgctggaa ctggaagcgg gttacagccg ccagggtaac 840
   ctgtatgcgg gcgataccca gaacaccaac tctgacgctt acactcgctc gaaatatggc 900
   gatgaaccaa accgcctgta tcgccagaac tactcgctga cctggaacgg tggctgggat 960

```



```

aaccggcgtga ccaccagcaa ctgggtgcag tacgaacaca cccgtaactc gcgtattccg 1020
gaagggtctgg cgggcggttac cgaagggaaa ttttaacgaaa aagcgacaca ggatttcgtc 1080
gataacgatac ttgatgacgt gatgctgcat agcgaagtta acctgccgat tgatttcctc 1140
gttaaccaga cgtgacgct ggggtacggag tggaatcagc agcggatgaa ggacttaagt 1200
5 tccaacaccc aggcactgac cggaacgaat accggtggcg ctattgatgg cgtgagtgcc 1260
accgaccgta gcccgatttc aaaagcagaa attttctcgc tgtttgccga aaacaacatg 1320
gagctgactg acagcaccat cgtaacgcgc gggctgcgtt tcgatcatca cagtattgtc 1380
ggcaataact ggagcccgcc gctgaacata tcgcaagggt taggcgatga cttcacgctg 1440
aaaatgggca ttgcccgccg ctataaagcg ccgagcctgt accagactaa cccgaactac 1500
10 attctctaca gtaaaggcca gggctgctat gccagcgcgt gcggctgcta tctgcaaggt 1560
aacgatgacc tgaagcaga aaccagcctc aacaaagaga ttggtctgga gttcaaacgc 1620
gacggctggc tggcgggcat cacctgggtc cgtaacgatt atcgcaataa gattgaagca 1680
ggctatgttg ctgtaggcca aaacgcagtc ggcaccgatc tctatcagtg ggataacgtg 1740
ccgaaaagcgg tgggtgaagg tctggaagga tcgttaaacg taccgggttag cgaaaacgggtg 1800
15 atgtggacta ataacatcac ttatatgctg aagagtgaac aaaaaccac gggcgaccgt 1860
ttgtcgatca tcccgagta tacgttgaac tcaacgctga gctggcaggc acgagaagat 1920
ttgtcgatgc aaacgacctt cacctgggtc ggtaagcagc agccgaagaa gtacaactat 1980
aaaggtcagc cagcgggttg accggaacc gtccttacag cattgttggg 2040
ctgagcgcga cgtgggatgt gacgaagaat gtcagctctga ccggcggcgt ggacaatctg 2100
20 ttcgacaac gtttgtggcg tgcgggtaat gccagacca cgggcgattt ggcagggggc 2160
aactatatcg ccggtgcggg ggcgtatacc tataacgagc cgggacgtac gtggtatatg 2220
agcgtaaaaca ctcacttctg a 2241

```

<212> Type : DNA

<211> Length : 2241

25      SequenceName : SEQ ID 441  
       SequenceDescription :

Sequence

-----

```

30 <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
    ttgggagggc gatttagtct cagggtacaaa aaactctcat atagattcgt ttttctgacc 60
    ttggcaggtt gttcttcagt aggcaaccag tcattgaaaa atgagacgca ggaaagtgtg 120
    aaaacaaaaa ttgttaaagg caaaactaca aaacaggagc tggttagcatc gttcggtgaa 180
35 cctgacagcc gttctttgat cgtgggtgaa gaacaatggt catacactat gtataacagc 240
    cagtccaaag caactctttt catccccgtt gtgggactgc ttgcaggttg cgcagactca 300
    caaactaaat ctctgacagt ttctttcaaa ggcgaaaaag tcagcacata catctttaat 360
    gctggaaaca gcaacgtgaa gactggcatt ttttag 396
40 <212> Type : DNA
    <211> Length : 396
    SequenceName : SEQ ID 442
    SequenceDescription :

```

Sequence

-----

```

45 <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
    atgaaaaaaa ttgcatgtct ttcagcactg gccgcagttc tggctttcac cgcaggtact 60
    tccgtagctg cgacttctac cgtaactggc ggttacgcac agagcgacgc tcagggccaa 120
50 atgaacaaaa tggcggtttt caacctgaaa taccgctatg aagaagacaa cagcccgctg 180
    ggtgtgatcg gttcattcac ttacaccgag aaaagccgta ctgcaagctc tggtgactac 240
    aacaaaaacc agtactacgg catcactgct ggtccggcct accgcattaa cgactgggca 300
    agcatctacg gtgtagtggg tgtgggttat ggtaaattcc agaccactga ataccggacc 360
    tacaacacag acaccagcga ctacggtttc tctacgggtg ctgggtctgca gttcaacccg 420
55 atggaaaacg ttgctctgga cttctcttac gacgagagcc gtattcgtag cgttgacgta 480
    ggcacctgga ttgccggtgt tggttaccgc ttctaa 516
60 <212> Type : DNA
    <211> Length : 516
    SequenceName : SEQ ID 443
    SequenceDescription :

```

Sequence

-----

```

65 <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
    atgaagagta tagcaacact agttgtgtgt gcaatctccg ggattgcctg tgtaaattta 60
    tctgcacatg cagcagaagg agagcatata atttctctgg ggtatgcgca ctttcagttt 120

```

```

ccgggactga aggattttgt aaaggatgcg actgctcata acagggagac tttcagtcac 180
ttcgtcaaca gaaactactt ttcttcattg ggcgaaatata cagatgggtcg ggtcagtgga 240
tatgaaggca aggataaaaa tccacagggc attaatatca ggtatcgcta cgagataacg 300
gatgattttg gcgttatcac ctcttttaca tggacgcgtt ctctcactaa ctccacagaca 360
5 tttattgatg tgcagtacgc cgatcatacc aggaagatta agaatccggc agcttctgcc 420
agaacggata tcaggcgcaa ttactggagt ctgttagcgg gcccttcacg gcgggttaat 480
cagtacatga gtttatatgc gatggcaggg atgggcggtg cttaaagttag cgctgacctg 540
aaaattaagg acaatattaa cagtagtggc ggattttctg aaagcaacag cacgaaaaaa 600
acctcccttg cgtgggctgc aggtgcacag tttaacctga atgagagtgt tacactggat 660
10 gtggcttacg aaggttccgg ctctggcgac tggcgcacga gtggcggttac tgctggcatt 720
ggcctgaaat tctga 735

```

<212> Type : DNA

<211> Length : 735

SequenceName : SEQ ID 444

15 SequenceDescription :

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7

20 <400> PreSequenceString :

```

atgcgtaaac tttatgccgc cattttgtcc gcagccattt gtctgaccgt atccgggtgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgtctcgacg 120
aacgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaattcacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaggaatcg ccagattacc 240
25 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc gggagtggct 360
tacagccgtg tgtcgacttt ctccggggat tatctccgcg taactgacaa caaggggaaa 420
acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
30 tccggcagtg gcgactggcg cactgacggt ttcacgtggg gtgtcggtta taagttctga 600

```

<212> Type : DNA

<211> Length : 600

SequenceName : SEQ ID 445

35 SequenceDescription :

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7

40 <400> PreSequenceString :

```

atgcgtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccgacg 120
agcgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
45 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc ggggtgtggct 360
tacagccgtg tgtcgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa 420
acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
50 tccggcagtg gcgactggcg cactgacggt ttcacgtggg gtgtcggtta taagttctga 600

```

<212> Type : DNA

<211> Length : 600

SequenceName : SEQ ID 446

55 SequenceDescription :

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7

60 <400> PreSequenceString :

```

atgcgtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccgacg 120
agcgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
65 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc ggggtgtggct 360
tacagccgtg tgtcgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa 420

```

```

acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

5  <212> Type : DNA
    <211> Length : 600
        SequenceName : SEQ ID 447
        SequenceDescription :

10  Sequence
    -----
    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
15  atgcgtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg 60
    cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccggacg 120
    agcgctcccc gtacgcataa tcttaacggg attaacgtga aataccgtta tgaattttacg 180
    gacacgctgg ggctgggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
    cgttacagcg ataccgcgct gcatgaagat tccgttcgta accgctgggt cagcgtaatg 300
    gcgggggcgt ctgtgcgcgt gaatgaatgg ttcagcgcg atgcgatggc ggggtgtggct 360
20  tacagccgtg tgctgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa 420
    acgcacgatg ggctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
    ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
    tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

25  <212> Type : DNA
    <211> Length : 600
        SequenceName : SEQ ID 448
        SequenceDescription :

30  Sequence
    -----
    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
35  atggtcatga gccagaaaac cctgtttaca aagtctgtc tcgcagtcgc agtggcactt 60
    atctccaccc aggcctggtc ggcaggtttt cagttaaacg aattttcttc ctctggcctg 120
    ggcggggctt attcagggga aggcgcaatt gccgatgatg caggtaacgt cagccgtaac 180
    cccgcattga tgacctatgt tgaccgccg acattttctg cgggtgcggt ttatattgac 240
    ccggatgtaa atatcagcgg aacgtctcca tctggtcgta gcctgaaagc cgataaacatc 300
    gcgcctacgg catgggttcc gaacatgcac tttgttgac cgattaacga ccaatttggt 360
40  tggggcgctt ctattacetc taactatggc ctggcaacag agtttaacga tacttatgca 420
    ggcgggctct tcgggggtac aaccgacctt gaaaccatga acctgaactt aagcgggtgcg 480
    tatcgcttaa ataatgcatg gagctttggt cttggtttca acgcgctcta cgctcgcgcg 540
    aaaattgaac gtttcgcagg cgatctgggg cagctgggtt ctggtcagat tatgcaatct 600
    cctgcgggga agactcctca agggcaagca ttggcagcta ccgccaacgg tatcgacagt 660
45  aataccaaaa tcgctcatct gaacggcaac cagtggggct ttggatggaa cgccgggtatc 720
    ctgtatgaac tggataaaaa taaccgctat gcactgcact acggttctga agtgaaaatt 780
    gacttcaaag gtaactacag cagcgatctt aatcgtgtgt ttaataacta cggtttgcca 840
    attcctaccg ccacaggtgg cgcaacgcaa tcgggttatc tgacgctgaa cctgcctgaa 900
    atgtgggaag tgtcgggtta taaccgtggt gatccgcagt gggcgattca ctatagcctg 960
50  gcttacacca gctggagtca gttccagcag ctgaaagcga cctcaaccag tggcgacacg 1020
    ctgttccaga aacatgaagg ctttaagat gcttaccgca tcgcgttggg taccacttat 1080
    tactacgatg ataactggac cttccgtacc ggtatcgct ttgatgacag ccaggttccg 1140
    gcacagaatc gttctatctc cattccggac caggaccgtt tctggctgag tgcaggtacg 1200
    acttacgcgt ttaataaaga tgcttcagtc gacgttggtg tttcttatat gcacggtcag 1260
55  agcgtgaaaa ttaacgaagg cccataccag ttcgagtcgt aaggtaaagc ctggctgttc 1320
    ggtactaact ttaactacgc gttctga 1347
    <212> Type : DNA
    <211> Length : 1347
        SequenceName : SEQ ID 449
        SequenceDescription :

60  Sequence
    -----
    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
65  atggcctttt ctcaagcggg tagcggatta aacgctgccg ccaccaacct cgatgttatt 60
    ggcaacaata tcgcctaact cgccacctac ggctttaaat caggcacggc ctcttttgcc 120

```

```

gatatgtttg cccggttcgaa agtgggactg ggggtaaaag ttgccgggtat cactcaggac 180
tttaccgatg gcaacgaccac caacaccggg cgtggtctgg acgttgctat cagccagaac 240
gggtttttcc gtctggtaga tagcaacggg tccggtgtct acagccgtaa cggacaattt 300
aagctgggatg aaaatcgtaa cctggtgaat atgcaagggt tacagctgac gggttaccgg 360
5 gcaaccggta cgcgcgcgac tattcagcaa ggggcgaatc cgactaacat ttcgatcccg 420
aataccctga tggcagcgaa aactaccacc acggcgctga tgcagatcaa cctgaattcc 480
agcgtaccgc ttccctctgt taacgcattt gatgccagca atgcggatag ctataacaaa 540
aaaggttcgg tgaactgtttt cgacagtcag ggtaattgctc atgacatgag cgtctacttt 600
gtgaagaccg gggataataa ctggcaggtc tacaccaggg atagcagtga tccaacagggt 660
10 acagccgagc ctcgaatgaa gctgggtgtt aatgccaatg gcgttctgac ctcaaattcca 720
acagagaata ttaccaccgg cgaattaac ggcgcagaa cccgccaggt tagcctgagc 780
ttcctcaact ccatgcagca aaataccggc gctaacaaca ttgtggcaac caccagaat 840
ggctacaaac cgggcgatct ggtgagttat caaatcaatg atgacgggtac ggttgtcggc 900
aactattcca acgaacaaac ccaactgctg gggcagattg tactggcgaa ctttgccaac 960
15 aacgaaggct tggcatccga aggcgacaac gtctggtctg cgacgcaatc ttctggcgtg 1020
gcgctggttg ggacagccgg gacgggcaac tttggcacc tgaccaacgg tgcgttgga 1080
gcgtccaacg tcgatctcag taaagaactg gtcaatatga tcgttgccca gcgtaactat 1140
cagtctaacg cccagaccat caaaaccag gaccagatcc tcaacacgct ggttaactta 1200
cgctaa 1206
20 <212> Type : DNA
    <211> Length : 1206
        SequenceName : SEQ ID 450
        SequenceDescription :

25 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atgtctaact cgactttttt acacattctg attagctcca tcatattggt ggcactaata 60
30 caatcatccg ctggggctaa ctgtacaaac acacagatag gtcaaaactga agatgggtcgg 120
acagcgctta ttgagttcgg aaaaattaat atgaccgaca cctattttgc gccagcagggt 180
tactcctcgc cgacaacggg cgtacctccc actaactaca catcagggtg cgcgacagga 240
agctccgtat tgtgggaatg tgatgcaaca gatttgccaa acatctattt tctggctcgt 300
acaaatggcg acgaccgcgt ggggggcttt tacgatgcag gcgggcctga tggctctgagt 360
35 gatgtctatg ccacctgggt cgctttttgtc ggtctcaagc agaccatggc gggcgtgacg 420
cttggctcgt actggaagaa agtgcccac accagttatg ccactcaggg aactaaaatc 480
cagattcgct tacaggatat cctcctctct catgctgagc tttatcgcat cagtacgcta 540
cctgatcatc cagcaacaac aagttggtgc ggtaataata atacagatag tagtggagtc 600
ggattcgcaa aaccttcggg tacaatctat aactgtgttc agcccaatgc ctatattcag 660
40 ctttcgggta ccagcggcat tttatttggt catgatgagc ccggcgaaga tagttctggt 720
cattgggatt tctggggtgc tgataatggt tttggttacg gaatgcgttc ggccaatcga 780
ctctacaaca atgccacctg cgttgcccgc agcgcacgcg cgttagtatt gctgccgaca 840
attgcagaag cacaactgaa tgcgggcatg gaaagtaccg gtaattttaa tgtccgcgtc 900
gagtgtagta actcgggtta atcagggatt agcgatactc agacagcatt aggaatccag 960
45 gtgtctgaag gtgcatatac agcggcgcaa aaactgggga ttatcaatag caacggcggc 1020
gtcagcgccc tggctctgta taattatgac gcagcagaga tggcaaaggg cgttggggtc 1080
tacatttcta acagtgtcga ccccgatacg gcgatgacgc tgggttggtca accgggcatc 1140
gcgaagttaa ccccgaggg aaatgcagcg ggggtggtatc ctgtatttga aggggcaaca 1200
ttagaagggt cgactcacc cggatactcc agctatagtt actcttttat cgcccggttg 1260
50 aagaaactgc caaatcagac agtcagtgcg ggaaaagtgc gggcaacggc ttatatattg 1320
gtgaaaatgc aatga 1335
<212> Type : DNA
<211> Length : 1335
    SequenceName : SEQ ID 451
    SequenceDescription :

55 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atggaaaaca atcgcaattt ccctgccaga caatttcatt cgctcacgtt ctttgccgggt 60
ctttgtattg gcatcacgac tgtggctcag gcaactcgcc ccgaagggca aactaacgcg 120
gatgacacgc tgggtgtcga agcatcaacg ccttcgcttt atgcgccaca acaatctgcc 180
gatccgaaat tctcgcgtcc ggtagcggat actaccgcga cgatgacggg gatttctgaa 240
65 caagtgatta aagatcaggg gcgaaccaac cttaccgatg cgctcaaaaa cgtccccggc 300
gtgggtgcgt tttttcggg tgagaacggg aactccacca ctggcgacgc catttatatg 360
cgcggtgctg atacctctaa cagtatttat attgatggca ttcgcgatat cggcagcgtc 420

```

```

5  tgcgcgcgaca ccttcaatac tgagcaggtc gaagtgatta aagggccttc cggcaccgac 480
   tacggggcgca gcgcgcgcgac gggctcgatc aatatgatca gcaagcagcc gcgcaatgat 540
   tccggcattg acgcctccgc cagtattggc agcgccctgg tccgcgcgcg cagcctggac 600
   gtcaatcagg tcatgtgtga taccactgcg gtgcgcctga atgtgatggg cgaaaaaacg 660
   cagcatgccc gacgcgacaa agtcaaaaaat gagcggttac ggcgcgcccc ttctatcgct 720
   tttggccttg gtacagcgaa tcgtttgtat cttaattatc tgcattgtcac ccagcacaa 780
   acgccagacg gcggcattcc aaccatcggg ttgcggggct attctgcccc atctgcagga 840
   acggcgaccc tgaatcattc cggaaaagtt gatacgcata acttttacgg caccgattcc 900
   gattacgacg attcgaccac cgacaccgcc accatcgctt ttgagcacga tatcaacgat 960
10 aacaccacca ttcgcaacac taccggttgg tcgcgcgtga agcaggatta cctgatgacg 1020
   gcgattatgg gtggggcgct gaattattacc cagcccacca gcgatgtgaa tagctggacg 1080
   tggtcacgca cggcgcaata caaagatgtg agtaataaaa ttctcaccaa ccagaccaac 1140
   ctgacctcga cattctatac cgcttctatc ggtcatgatg tcagtaccgg cgtggaattt 1200
   acccgtagaa ccgacagcaa ctaccgggtg aatccggtga cgttacctgc ggtaaatatt 1260
15 tatcatcctg acagcagcat tcatcccggc ggcctgacgc gcaacggcgc aaacgccaat 1320
   ggtcagacgg ataccttcgc aatttacgca ttcgatacgc tgcaaatcac cctgattttt 1380
   gagctgaacg gcgggatccg tctggataat tatcatactg aatatgacag tgcaccgcgc 1440
   tgcggcgcca gcggacgcgg tgccatcacc tgcgcagctg gtgtggcaaa aggttctccg 1500
   gtcaccaccg tcgacaccgc caagtccggc aatctgggtg actggaaagc cggggcgctg 1560
20 tatcacctga cggaaaaacg caatgtctat attaactatg ccgtttccca gcagcctccg 1620
   ggcggcaaca acttcgcctt tgcgcagctc ggcagcggta acagtgccaa ccgcaccgat 1680
   tttaaaacgc aaaaagatgt caccagcgag attgccacca aatggcaggt tctggataaa 1740
   cgctgtttgc tcaccgcgcg gctgttccgt actgatatcg aaaatgaagt tgagcaaaat 1800
   gatgacggga ctactcgca atacggtaag aaacgcgctc aaggctatga gatatccgtg 1860
25 gcagggaata tcactccgcg gtggcagggtg attggcggct ataccagca aaaagcaacc 1920
   atcaaaaacg gcaaaagtgt tgccaggatg ggttccctat cgctgcgcta taccgcggag 1980
   cagccttcca ccttatggag ccaatatcag gcaaccgatg atatctctgt tggcgcgggc 2040
   gcacgctata tcggcagtat gcataaaggt tcagacggcg cgggtgggaac gccagcgttt 2100
   accgaaggtt actgggtcgc cgatgcacaa ctgggggtata ggggttaatc caatctcgac 2160
30 ttcagctaaa acgtctacaa cctgtttgat accgattacg tcgcctcaat caataagagc 2220
   ggctaccggt atcaccggcg cgagccaaga accttcttgc tcacagccaa tatgcatttc 2280
   tga
   <212> Type : DNA
   <211> Length : 2283
35   SequenceName : SEQ ID 452
   SequenceDescription :

```

## Sequence

```

40  -----
   <213> OrganismName : Escherichia coli O157:H7
   <400> PreSequenceString :
   atgcaaatga agaaattgct cccattctt atcggcctga gcctttctgg gttcagttcg 60
   ttgagccagg ccgagaacct gatgcaagtt tatcagcaag cagccttag taaccggaa 120
   ttgcgttaagt ctgcgcgcga tcgtgatgtc gcctttgaaa aaattaatga agcgcgcagt 180
45  ccattactgc cacagctagg tttaggtgca gattacacct atagcaacgg ctaccgcgac 240
   gcgaacggca tcaactctaa cgcgaccagt gcgtccctgc agttaaactca atccattttt 300
   gatattgtcga aatggcgtgc gttaacgctg caggaaaaag cagcagggat tcaggacgtc 360
   acgtatcaga ccgatcagca aaccttgatc ctcaacaccc cgaccgctta tttcaacgtg 420
   ttgaatgcta ttgacgttct ttctataca caggcgcaaa aagaagcgat ctaccgtcaa 480
50  ttagatcaaa ccacccaacg ttttaacgtg ggcttggtag cgatcaccga cgtgcagaac 540
   gcccgcgcg agtacgatac cgtgctggcg aacgaagtga ccgcacgtaa taaccttgat 600
   aacgcggtag agcagctgcg ccagatcacc ggtaactact atccggaact ggcggcgctg 660
   aatgtcgaaa actttaaaac cgacaaacca cagccgggta acgcgctgct gaaagaagcc 720
   gaaaaacgca acctgtcgct gttacaggca cgcttgagcc aggaacctggc gcgcgagcaa 780
55  attcgccagg cgcaggatgg tcaattaccg actctggatt taacggcttc tagcgggatt 840
   tctgacacct cttatagcgg ttcgaaaacc cgtggtgccc ctggtaccca gtatgacgat 900
   agcaatatgg gccagaacaa agttggcctg tacaactttg ttggtgccag cgagcaactg 1020
   atgggttaact cgcaggtgaa acaggcacag gtacgttctt ctttcaacaa cattaatgct 1080
60  tctatcagta gtattaaacg ctacaaacaa gccgtagttt ccgctcaaaag ctcatagac 1140
   gcgatggaag cgggctactc ggtcggtagc cgtaccattg ttgatgtgtt ggatgcgacc 1200
   accacgctgt acaacgcgca gcaagagctg gcgaatgcgc gttataacta cctgattaat 1260
   cagctgaata ttaagtacgc cctgggtacg ttgaacgagc aggatctgct ggcactgaac 1320
   aatgcgctga gcaaacgggt ttccactaat ccggaacacg ttgccccgca aacgcgggaa 1380
65  cagaatgcta ttgctgatgg ttatgcgcct gatagcccg caccctcgtt tcagcaaaac 1440
   tccgcacgca ctaccaccag taacggtcat aaccctttcc gtaactga 1488
   <212> Type : DNA

```

<211> Length : 1488  
SequenceName : SEQ ID 453  
SequenceDescription :

## 5 Sequence

-----

&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

gtgaccaa	ac	tcaa	actt	ct	ggcact	tgga	gtgctt	atcg	caacgt	ctgc	agggc	tagcg	60
cacgctga	ag	gtaa	at	tttt	cctggg	cgca	ggcgta	gggtg	tcgttg	aaaca	cccat	ataaaa	120
gattacga	ta	ccgat	gttt	ta	ccagta	ccg	gtaat	caact	atga	aggcga	taact	ttctgg	180
ttccgtgg	ct	taggt	gggtg	gt	ttact	ac	ctg	tgga	atg	acg	gataa	acttt	240
accgctta	ct	ggcg	ccgct	tt	actt	caaa	gctaa	agaca	gtggc	gatca	ccaa	atgcgt	300
cacctggat	g	accgta	agag	cac	aatga	tg	ctgg	gtctgt	ctt	atg	ctca	cttt	360
tacggttac	c	tg	cgtacc	ac	cctgg	ctggc	gata	ccctg	ata	acag	caa	cggcat	420
tgggat	at	gg	gttgta	tc	gtt	acac	aacg	gtgg	cc	tg	accgt	gac	480
gggtg	cgag	gga	acag	cg	aa	ccaga	ac	ga	ata	ctatt	atgg	cgtatc	540
tcggtc	gcga	gg	gtctg	cg	tg	gtata	ac	tc	ga	acgaca	gctg	gagccc	600
ctgag	cgcca	gct	aca	actt	cct	cg	cg	gac	tg	gag	tgtt	acggt	660
cgtctgt	ctg	at	ga	agtt	ac	tg	acag	cccc	att	gtg	gata	aatc	720
tctacc	ggga	tc	acct	acaa	att	ctga							747

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 747

SequenceName : SEQ ID 454

25 SequenceDescription :

## Sequence

-----

&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

atgaaaaa	aa	catt	actggc	ag	ccgg	gtgc	gtact	ggcg	ctct	ttcg	ctc	tttt	actgtc	60
aacgcag	ctg	aaa	acg	acaa	accg	cag	tat	cttt	ccg	act	gg	tg	gcac	120
gttgct	ggaa	gct	at	cacac	ccg	tttc	cgga	ccg	cag	atcc	gca	acg	atac	180
tacgaag	cat	tcg	ct	aaaaa	ag	actg	gttc	gact	ttct	atg	gtt	atg	cgga	240
ttcttc	ggcg	gta	act	ccga	tg	caaa	aggt	at	ctg	ga	acc	acg	gtt	300
gaaat	cgaac	cac	gttt	ctc	cat	cg	aca	ag	ctg	ac	caata	ctg	ac	360
ttcaa	agagt	gg	tact	tcg	ga	aca	actac	att	tac	gaca	tg	gg	tcg	420
cgccag	agca	ct	gg	tacat	gg	gt	ctg	gg	gt	ac	cg	at	atc	480
ctgtcc	atga	ac	gt	ctat	gc	gaa	at	acc	ag	tg	gc	aga	act	540
gagtg	ggg	acg	gtt	acc	gtt	caaa	att	ataa	tact	tt	gt	gc	cg	600
ggtcag	ctga	gct	ac	ctcg	gtt	cac	caac	ttc	gact	ggg	gtt	ccg	att	660
agcgt	taacg	caat	ca	acg	gtt	ata	ag	acc	cgt	act	aa	ta	ctgc	720
attct	ggctc	tga	act	acga	tc	act	gg	cac	tact	ct	gt	ctg	ta	780
gggtg	tcagt	gga	ac	gacga	tg	caga	actg	aact	tc	gg	ca	actt	ca	840
tctacc	ggct	ggg	gtg	gtta	cct	ggt	tagta	ggt	taca	act	tctga			885

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 885

SequenceName : SEQ ID 455

50 SequenceDescription :

## Sequence

-----

&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

atgcttt	caa	caca	at	ttta	cagg	gata	aat	caat	at	caag	ccat	ca	ccaa	60
cttgcc	ggtt	gc	atag	cact	gg	cact	atta	cctt	ctg	ccg	cttt	t	gctgc	120
gaagaa	acgg	tg	att	gttga	gg	gttc	agcc	ac	ag	ctcc	ag	at	gat	180
agcgt	aacgt	ct	acct	ctgc	gg	gt	acaaa	at	gc	agat	ga	ct	ca	240
tcggt	ca	ct	ta	gcca	gc	ag	cg	gatg	ga	ag	at	ca	aac	300
gtgat	ggaaa	ac	ac	gctggg	gat	cag	caaa	ag	tc	ag	g	at	cc	360
tattccc	gcg	gatt	cc	agat	cg	ata	actat	at	gg	tt	gatg	gt	at	420
tcgcg	ctgga	at	ct	ggg	cg	ca	cttt	ct	gat	tg	gcac	tg	tt	480
gtgcg	tg	ggc	g	gact	cat	g	acc	ggg	ac	gg	g	ta	atc	540
gttcg	aaa	aac	ac	gc	g	acc	ag	tc	gt	ga	att	aa	agg	600
tgga	acaa	ag	aac	g	gt	at	gt	gg	c	g	att	ta	aa	660
cg	cg	cg	cg	aa	tt	gt	tc	gg	cg	cg	gt	gg	ac	720
gaaa	ag	ac	ct	tctt	ct	ccg	catt	gt	ct	gat	tt	ag	gc	780

```

gcccgttacg aatatcagcg cattgatgtt aatagcccaa cctggggcgg tttaccgcgc 840
tggaatactg atggcagcag caacagttac gatcgcgcac gcagtagcgc acctgactgg 900
gcgtacaacg ataaagagat caacaaggtc tttatgaccc tgaagcagcg gtttgctgat 960
acctggcaag cgacactgaa tgccacccac tctgaagtgc aatttgacag caaaatgatg 1020
5 tatgtcgatg cctatgtaaa caaagcggat ggtatgctgg ttggggcata cagtaattat 1080
ggacctggct ttgattatgt cggcggcacc ggttggaaac gtggcaaacg taaagtgtat 1140
gcgctggatt tgttcgctga cggtagttat gaattgtttg gtcgtcagca caatctaattg 1200
tttggtaggca gttacagcaa acaaaacaat cgttacttca gttcatgggc caacatcttc 1260
ccggatgaaa ttggcagttt ctacaacttt aatggcaatt tcccacaaac cgactgggtca 1320
10 ccacagagcg tggcgaggga cgataccaca catatgaaat cgttatatgc tgccactcgt 1380
gtcacccctg ccgatccgct gcatctgatc ctggcgccac gttataccaa ctggcgggtt 1440
gatacgttga cttacagcat ggagaaaaac cacaccacgc cttacgctgg tctgggtgtt 1500
gacatcaatt acaactggtc gacctacgac agctatacct ctattttcca gccgcaaaat 1560
gatcgtgaca gttcaggcaa atatctggct ccaatcaccg gtaaaacta cgagctgggt 1620
15 ctgaaatcgg actggatgaa tagcgtctg accaccacgt tagccatctt ccgtattgag 1680
caggataatg tcgctcagtc caccggtaca cctatccccg gcagcaacgg cgaaaccgcc 1740
tataaagcgg tggatgggac agtcagttaa ggggtggaat ttgaactcaa cggcgcaatt 1800
accgacaact ggcagctgac atttggcgca acgcgtata ttgcagagga taacgaaggga 1860
aacgcggtta atcctaattc gccacgcacc acggttaaaa tgttcaccag ctatcggttg 1920
20 cctgtcatgc cagagttgac agtcggcggt ggtgttaact ggcaaaatcg cgtgtatacc 1980
gacaccgtga caccgtatgg caccctccgc gccgagcaag gtagctacgc gttgggtggat 2040
ctcttcaccc gctacagggt gacgaaaaac ttctcgttac aggggaacgt caataacctg 2100
ttcgacaaaa cctacgatac caacgtggaa ggttctatcg tctacggcgc accgcgtaat 2160
ttcagcatta ccggcacgta tcaattctga 2190
25 <212> Type : DNA
    <211> Length : 2190
        SequenceName : SEQ ID 456
        SequenceDescription :

30 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atggcgcgat tccagtttaa aaaccgtaaa aataatggac ttattttttt tataagtttt 60
35 atggtgatgg gagaagctgc aattgctgca ccgctgccac aatgggcgaa tgccccagcg 120
gtaacgccag ttgcccaatt atctttacag gaaagtatat tacgcgcctt tgccgcaaat 180
cccgtgttca ctcaacaggc ggccgagata ggtattggcg aagcgcaaat tgatgaagcc 240
aaaagtgcct ggtatccgca cgttggttta accggcaacg cggggcgctc ccgacaaacg 300
gactccagcg gcaggcttga taacaacggt tcgtatggca taacctgac acaactggtg 360
40 tatgactttg gtaaaactaa caacgatatc aatctgcaaa ctgccgcccg tgacagctac 420
cgctttaaatt tgatggcaac cttaaccgat gttgcagaga aaacggcgac tgcctacatg 480
gaagtcaatc gttatcaggc tttgtgcgat cgggtcaac gcaatattca ctcgctggaa 540
aacgtctaca acatggcggc attgcgcgct aacgcaggcc tgaactcatc gtcggatgaa 600
ttacaggccc agacgcgtat tgccgggaat cgctcaacgc tggagcaata tcaggcgag 660
45 atggcgagcg ccaaagcgca actggcggtg ctactggcg tacagccgga ggcgatagcc 720
gcgccacctg ctgaattagc cgagcagccg gtatcgctga agaattattga ttaccagtcc 780
atcccgcgtg tgctggcgcc agaaaactta cgccagtcag cacagtacgg cgtggaaaaa 840
acgaaagcgc aatactggcc aacgctcagt attcaggggg gtaaaacgcg ctaccagacc 900
agcgaccgct cgtattggga tgatcagcta caactgaacg ttaacgcgcc gctgtatcag 960
50 ggcggcgcg tttctgcccc ggtgcaacag gccgaaggcg aacaaaaaat ctctgcctcg 1020
caggctgaac aggcaaaact ggatgtgctg caacgagcgt ctgtggcata tgcgaactgg 1080
accggcgcac ggggtcgtga agaagccggt ttacgcgaat ccgaaagtgc gcacaaaacg 1140
cgagatgtgt accaaaatga atataaattg ggtaaacgca gtctgaatga tctattaacc 1200
gtcgaaacaag atgtctttca ggcgcaatcg gctgaaataa atgccaatga tgatggctgg 1260
55 gtcgcccggc taaattatgc cgctgcggtg aataacctta ttccattagc gggaattaaa 1320
cagggttat acaacgactt acccgacttg aaataa 1356
<212> Type : DNA
<211> Length : 1356
    SequenceName : SEQ ID 457
    SequenceDescription :

60 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
65 <400> PreSequenceString :
atggctaagt tcacaccttc attctcagga atcaaaggtc ggcgcgtctt ttcactgctc 60
tttgcagcac caatgattca tgcaaccgac actgcaacga ccaaagatgg cgaacaacatc 120

```

```

actgttacag cggatgcaaa taccgcaact gaggcgaccg atggttatca acctctgagc 180
actttcacgg cgacattaac cgatatgccg atgctggata tcccgaggt ggtcaataac 240
gttagcgatc aggttcttga aaatcagaat gcaacgacgc tggatgaagc gctttataac 300
gtcagtaacg tggtagagac caatacatta ggcggaactc aggacgcctt tgtacgtcgt 360
5 ggttttgggtg ctaaccggga tggctccatc atgaccaacg gcctgcgaac tgtacttct 420
cgagttttca acgcccggac agaactgtgtg gaagtgcctaa aagggtccggc ctccacgctg 480
tatggcattc tcgatccctg tggattgatt aacgtcgtga ccaagcgccc ggaaaaaaca 540
ttccatgggt ctgtctcagc cagtcctcc agttttggcg gaggcactgg gcaacttgat 600
atcacaggtc ccattgaagg cactcagctg gcataccgcc tgacggggga agtgacggat 660
10 gaagattact ggcgaaactt cggtaaagag gcagtagcat ttattgcccc gtcactcacc 720
tggtttgggtg ataatgcac agtaaccatg ctctattccc atcgggacta taaaactccg 780
ttcgatcgtg gaacgatttt cgaccttacg acgaaacagc ccgtaaacgt tgatcgaaaa 840
atacgttttg acgaaccggt taatattaca gatggtcagt cccgtctggc gcaactcaac 900
gcagaatatc atctcaatag ccagtggaca gtcggttttg attacagcta cagccaggat 960
15 aaatacagcg acaatcaggc tcgctgtacc gcgtatgatg caacgacagg aacgctgaca 1020
cggcgtgttg atgcaactca gggatctacc cagcgtatgc attctactcg tgcggatctg 1080
caagggaattg ttgatattgc tgggttctat aatgagattc tgggtggggg gtcatatgaa 1140
tattatgatc ttctgcgcac agatatgatt cgctgtaaaa acgctaaaga tttcaatatc 1200
tacaaccccc tttatggcaa taccagcaaa tgcacaacgg tttcggcgtc ggacagtgat 1260
20 cagacgatca aacaggagag ctactcagct tatgcacagg atgcgtctta tctgaccgat 1320
aactgggattg ccgtcgccgg gatccgctat cagtattaca acgcttccg cggtaaaggc 1380
cgtcttttta atgtcaatac tgacagccgc gatgaacaat ggacgcccac actgggggta 1440
gtctacaaac tgacgccatc ggtatcctta tttgctaatt attcgcaaac atttatgccg 1500
caatcgtcaa ttgccagcta catcggagat cttccaccgg aatcatctaa tgcttacgaa 1560
25 gtccgggaa aattcgagct gttcgatggg ataacccgag atattgcgtc gtttgatata 1620
cataaacgta acgtgttgta taccgaaagt attggtgatg aaaccatcgc caaaacggca 1680
ggccgcgttc gttcaagagg ggtagaagtc gaccttgccg gagcattaac tgaaaacatt 1740
aatatcattg ccagctacgg ctataccgat gctaagggtc tggaagatcc tgattatgca 1800
gggaaccat tgccgaatgt tcctcgtcat accggttcgc tattcctgac ctatgacatt 1860
30 cataacatgc caggcaataa cactactgac tttggcgggt gtggacattg cgtaagccgt 1920
cgttcggcaa ccaatggggc tgactattat ctgccaggct atttcgttgc cgatgccttc 1980
gccgcataca aaatgaaatt gcagtatccg gtcacactgc aattaaacgt caaaaacctg 2040
tttgataaaa cgtattacac ctctccatc gccacaataa atctggggaa tcagattggc 2100
gatccgcgtg aagtgcatt caccgtgaaa atggaatttt ga 2142
35 <212> Type : DNA
<211> Length : 2142
SequenceName : SEQ ID 458
SequenceDescription :

40 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atcgcgactc tgcagggtg gttgttgccg gtgtttatgt tgcctatggc agtatatgca 60
45 caagaggcaa cggtgaaaga ggtgcatgac gcgccagcgg tgcgtggcag tattatcgcc 120
aatatgctgc aggagcatga caatccgttc acgctctatc cttatgacac caactacctc 180
atctacaccc aaaccagcga tctgaacaaa gaagcgattg ccagttacga ctgggcggaa 240
aatgcgcgta aggatgaagt aaagtttcag ttgagcctgg catttcctgt gtggcgtggg 300
attttaggcc cgaactcgtt gttgggtgcg tcttatacgc aaaaatcctg gtggcaactg 360
50 tccaatagcg aagagtcttc accgtttcgt gaaaccaact acgaaccgca attgttcttc 420
ggttttgccg ccgattaccg ttttgagggt tggacgctgc gcgatgtgga gatgggggat 480
aaccacgact ctaacggggc ttcagaccgg acctcccgca gctggaaccg cctttatact 540
cgcctgatgg cagaaaacgg taactggctg tagaagtga agcgtggta tgtggtgggt 600
aatactgacg ataaccggga tatcaccaaa tatatgggtt actaccagct taaaatcggc 660
55 tatcacctcg gtgatgcggt gctcagtgcg aaaggacagt acaactggaa caccggctac 720
ggcggcgccg agttaggctt aagttacccg atcaccaaac atgtgcgcct ttatactcag 780
gtttacagcg gctatggcga atcgctcatc gactataact tcaaccagac ccgtgtcggg 840
gtggggggtt tgctaaacga tttgttttga
<212> Type : DNA
60 <211> Length : 870
SequenceName : SEQ ID 459
SequenceDescription :

65 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :

```



```
atggcgggttc aaaagaatgt tatcaaaggg atactggcag gtacgtttgc gctaattgctg      60
agcgggttggtg tcactgtgccc ggacgccatt aaaggcagca gtcccacgcc gcaacaagat      120
ttagttcggg tgatgagtgc gccgcagctg tacgttgggtc aggaggcacg ctttgggtggc      180
aaagtgggttg cggtaacaaaa ccagcaagggg aaaaccogcc tggaaattgct taccgtaccg      240
5 ctggacagcg gagccagacc gacgctggga gaaccttctc gcggtcgcat ttatgccgat      300
gtgaacgggtt ttctggacccc ggtggatttc cgtggacaac tggttacggt agtcgggcca      360
atcactggtg cgggtgacgg aaaaatcggc aacacgccct ataaatttat ggtgatgcag      420
gcaacaggtt acaaacggtg gcatttaacc cagcaggtga ttatgccgc tcagccgatt      480
gatccctggt tttatggcgg tcgtgggtgg ccctatggcc acggcggtg gggctggtat      540
10 aatcccggcc ccgcgagagt acaaacagtt gtaactgaat aa      582
<212> Type : DNA
<211> Length : 582
      SequenceName : SEQ ID 460
      SequenceDescription :
15
Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
20 atgcgtaagc agtggctcgg gatctgcatc gcggcaggaa tgctcgcggc atgtacaagc      60
gatgatgggtc agcaacagac agtaagtgtc ccgcagcctg cggtatgtaa cggcccccata      120
gttgaaatta gccggggcgga cccgcgtttc gaaccactga acgcgacggc aaatcaggat      180
taccagcgcg acggtaaaag ctacaaaatc gtgcaggatc cgtctcgatt tatccaggcg      240
ggactggcgg caatctatga tgcggaacca ggcagtaacc tgacggcctc tggcggaagct      300
25 ttcgatccga cacagctgac ggcggcccat ccaacgcttc cgatcccag ctacgccaga      360
atcactaac tggctaacgg gcgaatgatc gtgggtcgca ttaatgatcg cggtccttac      420
ggcaacgacc gcgttatctc gctttctcgc gcagcagctg accgtcttaa cacgtcaaac      480
aacaccaaag ttctgtatga tccgattatt gtcgccagg atggttcgct ttctggtcct      540
ggtatggctt gtaccacagt cgccaaacag acttacgccc tgctgcacc tcccgattta      600
30 agcgggtggc cgggaacaag ttcagtgtct ggcgcgagg gtgacattct tccggtcagt      660
aattcgacgc taaaaagcga agatccgacc ggcgcgccgg taaccagcag cggtttctct      720
ggcgaccacaa cgaccttagc gccaggtgta ctggaaggca gcgaaccgac gcctgctcca      780
cagccccgtt ttacagctcc gtcgacaacg cctgcaacct cgctgcaat ggtgacaccg      840
caagccgcct cgcaaacggc cagcggcaac tttatgggtc aggtcggggc cgtaagcgat      900
35 caggctcgtg cgcaacagta ccaacagcaa ctgggacaga agttcggcgt ccccggtcgc      960
gtaactcaaa atggcgcggt ctggcggatc cagcttggcc cattcgccaa caaagccgaa      1020
gccagtacct tgcagcaacg tttgcaaacc gaagcccaat tacagtcatt tattaccacc      1080
gcgcagtag      1089
<212> Type : DNA
40 <211> Length : 1089
      SequenceName : SEQ ID 461
      SequenceDescription :
45
Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atgattaaac gcgtattggt tgtttcaatg gtaggtctgt ctcttgctcg ttgtgttaat      60
aacgacaccc tgtcagggga tgtttatacc gtttctgaag cgaaacaagt acagaatgtc      120
50 agctatggaa ccatcgttaa cgtacgtccg gtacagattc agggcggtga tgattccaac      180
gttatcggtg caattggcgg tgcgtttctt ggtgggttcc tgggaaat ac tgttggtggc      240
ggaaccgggc gttctctggc tactgcagca ggcgctgttg caggtggcgt agctggtcag      300
ggcgtagaca gtgcaatgaa caaacgcaa ggtgtcgagc tggaaattcg taaagacgat      360
ggtaataacca tcatggtggt acagaaacaa ggcaacactc gtttctctcc gggccaacgt      420
55 gtcgtactgg ccagcaatgg cagtcagggt accgtttctc cgcgctaa      468
<212> Type : DNA
<211> Length : 468
      SequenceName : SEQ ID 462
      SequenceDescription :
60
Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
65 gtgtcaaagg caaccgaaca aaacgacaag ctcaagcggg cgataattat ttcagcagtg      60
ctgcatgtca tcttattg cgcgctgata tggagttcgt tcgatgagaa tatagaagct      120
tcagctggag gcggcggtgg ttcgtccatc gacgctgtca tgggtgatct aggtgcggta      180
```

```

gttgagcagt acaaacgcat gcaaagccag gaatcaagcg cgaagcggtc tgatgagcag 240
cgcaagatga aggaacagca ggctgctgaa gaactgcgtg agaaacaagc ggctgaacag 300
gaacgcctga agcaacttga gaaagagcgg ttagctgctc aggaacagaa aaagcagggt 360
gaagaagccg caaaacagcg cgagttaaag cagaagcaag cggaaagaggc ggcagcgaaa 420
5 gcgcgccgag atgctaaagc gaaggccgaa gcggtatgata aagctgcgga agaagcagcg 480
aagaaagcgg ctgcagacgc gaagaaaaaa gcagaagcag aagccgccaa agccgcagcc 540
gaagcgcaga aaaaagccga ggcagcagct gcggcgctga agaagaaagc ggaagcggca 600
gaagcagctg cagctgaaagc aagaaagaaa gcggcagcag agaaagctgc agccgacaaa 660
aaagcagcag aaaaagcggc tgctgaaaag gcagcagctg ataagaaagc agcggcagaa 720
10 aaagccgcgg cagacaaaaa agcggcagct gcaaaaagcag cagctgaaaa agccgctgca 780
gcaaaagctg ccgcggagggc agatgatatt ttcgggtagc taagctctgg taagaatgca 840
ccgaaaacgg ggggagggggc gaaaggggaa aatgcttcgc ctgccgggag tggtaatact 900
aaaaacaatg gcgcacatag ggccgatatc aataactatg ccgggcagat taaatctgct 960
aatcgaagta agttctatga cgcacgttcc tatgcaggca aaacctgtac gctgcgcata 1020
15 aaactggcac ccgatggtat gttactggat atcaaacctg aaggtggcga tccgcgactt 1080
tgtcaggctg cggtggcagc agctaaactt gcgaagatcc cgaaccacc aagccaggca 1140
gtatatgaag tgttcaaaaa cgcgccattg gacttcaaac cgtaa 1185
<212> Type : DNA
<211> Length : 1185
20 SequenceName : SEQ ID 463
SequenceDescription :

Sequence
-----
25 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
gtgatgaaat taaaaaaatg tcttctgcct gtggcaatgt tagcgtcatt cactctggca 60
ggatgccagt caaatgctga cgatcatgcc gccgatgttt atcaaaccca tcaactgaat 120
30 accaacaag aaactaaac cgtaaattt atttccattc tcccgcaaa agttgcccga 180
gacaactccc aaaataaacg gaacgcacaa gccttcggcg cgcttattgg cgcagtcgct 240
ggcgggtgta tcggccacaa cgtcgggtct ggcagcaatt ccggaacgac ggcagggtgca 300
gttggcggcg gagctgtagg cgcggcagcg ggttctatgg tgaatgataa aaccttagtg 360
gaaggtgttt cttaaagcgt taaggaagcg accaaagtgt atacctctac tcagggtgggt 420
aaagagtgcc agtttacgac aggttttagcc ttgtttatta ccacgacgta taacgaaacg 480
35 cgtattcagc caaataccaa atgtcctgaa aagagctaa 519
<212> Type : DNA
<211> Length : 519
SequenceName : SEQ ID 464
SequenceDescription :

Sequence
-----
40 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
45 atgttgctta gcataatcac tgtcgcgttt cgtaacctcg aagggatagt caaaacacat 60
gcctcgctgg cgcacatggc gcaggcggaa gatatacagc tcgaatggat tgttgtcgat 120
ggcgggttcca atgacggcac tcgtgagtag ctggaaaatc tcaatgggat ctataaccta 180
cgctttgtca gcgagccaga taacggtatc tacgacgcca tgaacaaggc cattgcatg 240
gcacaaggca agttcgcgtt gtttctcaac tcgggcgata ttttctatca ggatgcccga 300
50 tattttgtcc gtaagttaaa aatgcaaaaa gataacgtga tgatcacggc cgatgcgctg 360
ctggattttg gcgacgggca taaaattaaa cgtagcgcca aaccgggctg gtatatattat 420
cacagcctgc ccgccagtc tcaaggcgata ttttcccggt tatccgggtt gaaaaaatgg 480
cgttatgacc tggaaatata agtttctctc gattacgcgc tggcagccaa aatgtataaa 540
gcagggttat catttaaaaa actcaatggc ctggtgtctg aattttctat ggggtgggta 600
55 tctaccacca ataatatgga attgtgtgct gacgcgaaaa aagtccaacg gcaaatatta 660
catgtgcctg gcttttgggc tgaattatcc tggcatttac gccagcgtag tacctcaaa 720
acgaaagcct tatatacaa aagctga 747
<212> Type : DNA
<211> Length : 747
60 SequenceName : SEQ ID 465
SequenceDescription :

Sequence
-----
65 <213> OrganismName : Haemophilus influenzae Rd
<400> PreSequenceString :
atgaaattaa caactgca aaccttgaaa aaagggttta cattaatcga gctaatgatt 60

```

gtgattgcaa ttattgctat tttagccacc atcgcaattc cttcttatca aaattatacc 120  
 aaaaaagctg cggatatccga attactgcaa gcgtctgcgc cttataaggc tgatgtggaa 180  
 ttatgtgtat atagcacaaa tgaacaaca agctgtacag ggggaaaaaa tggatttgca 240  
 gcggtatata agacagcaaa aggctatgta gcctcagtta tcaactcaatc aggtggtatt 300  
 5 acagtaaaag ggaatggcac attggcaaat atggaatata ttttgcaagc taaaggtaat 360  
 gctgcagcag gtgtaacttg gacaacaacc tgcaaaggaa cggatgcctc tttatttcca 420  
 gcaaattttt gcggaagtgt cacaaaatga 450  
 <212> Type : DNA  
 <211> Length : 450  
 10 SequenceName : SEQ ID 466  
 SequenceDescription :

Sequence  
 -----

15 <213> OrganismName : Haemophilus influenzae Rd  
 <400> PreSequenceString :

atgctaata aaaaattcaa actcaatttt attgcgctta ctgtcgctta cgcattaacc 60  
 ccttatacag aagctgcggt agtgagagac gatgtggatt atcaaatatt tcgtgatttt 120  
 gcagaaaata aaggagagatt ttctgttggg gcaacaaatg tggaaagtgg agataaaaaat 180  
 20 aaccactcct taggcaatgt tttacctaata ggcatccga tgattgattt tagtgttgtg 240  
 gatgtagata aacgcatacg cacattgata aatccacaat atgtagtagg tgtaaaacac 300  
 gtttagtaacg gcgtgagtag actacatttt gggaacttaa atggcaatat gaataatggc 360  
 aatgctaata cgcaccgaga tgtatcttca gaagaaaata gatatttttc cgttgagaaa 420  
 aatgagtagt caactaaatt gaatggaaaa gcagtaacta ctgaagatca aactcaaaaa 480  
 25 cgccgtgaag actactatat gccacgtctt gataaatttg ttaccgaagt tgcaccaata 540  
 gaggttcaaa ctgcaagtag tgatgctggc acatataatg atcagaataa atatcctgct 600  
 tttgtaagac taggaagtgg tagtcaattt atttataaaa aaggagataa ttacagctta 660  
 attttaataa atcatgaggt tggaggcaat aatcttaaat tgggtggcga tgcctataacc 720  
 tatggtattg caggcacacc ttataaagta aaccacgaaa ataatggact aattggtttt 780  
 30 ggcaattcaa aagaggaaca cagcgatcca aaaggcaatat tatctcaaga tccgcttacc 840  
 aattatgctg ttttaggcga cagtggctcc ccattatttg tatatgatag agaaaaagga 900  
 aaatggcttt ttcttgggtc ttatgatttt tgggcagggt ataacaaaaa atcttggcaa 960  
 gaattggaata tttataaacc tgaatttgca aaaaactgtc tagataaaga tactgcaggt 1020  
 tctttaactg gttctaaccac ccaatacaat tggaaatccta ctggcaaac aagcgttatt 1080  
 35 tctaattggt ctgaatctct aaatgttgat ttattcgata gtagtcagga tactgactct 1140  
 aagaagaaca atcacggaaa aagtgtgact cttagaggaa gtggaaacgt taccttaaat 1200  
 aataatctcg atcaaggcgc aggcggcttg ttctttgaag gagattatga agttaaaggc 1260  
 acttctgata gtacacacttg gaaaggagct ggcttttctg ttgctgatgg aaaaacagta 1320  
 acgtggaaag tacataaccc gaaatctgat cgtttagcta aaatcggaac aggaacatta 1380  
 40 attgtagaag gaaagggaga aaataaagggt tcgctaaaag tgggcgatgg tactgttatc 1440  
 ttaaaacaac aagctgatgc caataataaa gttaaagcct ttccacaagt aggtatagta 1500  
 agtggctcgt acttggtgt acttaatgat gtaagcgaag tagatccaaa ttccatttac 1560  
 tttggcttta gaggtggtcg attagatgcc aatggcaata atctcacttt tgaacatata 1620  
 cgtaatatgg atgatggcgc aagactagta aatcacaata ccagcaaac ctctactgta 1680  
 45 acaattactg gggaaagtct aattacagat ccaaatataa ttactccata taatatagac 1740  
 gcaccagtag aagataatcc ttatgccttt cgcaggatta aagatggagg acagctctat 1800  
 ttaaatttgg aaaattacac ttattatgcg ttaagaaaag gtgcgagcac tcgttcagaa 1860  
 ttacctaata atagtggcga aagcaatgaa aattggctat atatgggtaa aacttccgat 1920  
 gaagccaaaa gaaatgtaat gaaccatata aacaacgagc gtatgaatgg ctttaacggt 1980  
 50 tattttggcg aggaagaggg taaaaataac ggtaacttaa atgtgacttt taaaggcaaa 2040  
 agtgagcaaa atcgcttttt attaacaggc ggaacaaacc ttaatggcga tttaaagggt 2100  
 gaaaaaggca cattattcct ttctggcaga ccaacaccgc acgcaagaga tattgcaggt 2160  
 atttcttcga caaaaaaaga tcaacacttt gctgaaaata atgaagtgg agtagaagat 2220  
 gactggatta accgcaattt taaagcaaca aatattaatg taaccaataa cgcaaccctt 2280  
 55 tattcagggt gcaatgttgc aaacattact tcaaatatca cagcttctga taatgcaaaa 2340  
 gtacatatgg gctataaagc aggcgatacc gtttgtgtac gttctgacta tacgggctat 2400  
 gtgacttgca ctactgacaa gttatccgat aaagccctta atagctttta cgccaccaat 2460  
 gtatctggca atgtaaaatt atcaggtaat gcaaaccttg tcttaggcaa agctaactta 2520  
 ttcggcacia ttagcggcac gggaaatagc caagtacgtt taaccgaaaa tagccattgg 2580  
 60 catttaacag gcgatagcaa tgttaatcag ttaaatntag acaaggggca tattcattta 2640  
 aatgcacaaa acgatgcaaa taaagtaact acatataaca cgctgactgt gaatagctta 2700  
 tcaggtaacg gttctttcta ttatttaact gatctttcca ataacaagg cgacaaagtt 2760  
 gttgtaacta aatccgccac aggttaacttt acattacaag tggcagataa aacaggcgag 2820  
 cctacaaaaa atgaactcac gctttttgat gcgtcaaatg ctacaagaaa taatttgaat 2880  
 65 gtgtcattag ttgggaatac cgttgattta ggtgcttgga aatataaatt acgtaatggt 2940  
 aatggacggt acgatttgta taaccagag gtggaaaaaa gaaatcaaac tgtcgatagc 3000  
 acaaatatca caacacctaa taatattcaa gctgatgtgc ctacgctacc aagtaacaat 3060

	gaagaaatag	cccgtgttga	aacaccagtt	ccaccacctg	cgcttgcctac	accatcagag	3120
	acaactgaaa	cagtggtctga	aaatagtaag	caagaaagta	aaacagtaga	gaaaaacgag	3180
	caagacgcaa	ccgagacaac	agctcaaaat	ggagaagttg	cagaagaagc	taaaccaagt	3240
	gtaaaagcta	atactcaaac	aaatgaagtg	gctcaaaagt	gaagtgaaac	cgaggaaact	3300
5	caaacgactg	aaataaaaaga	aacagctaaa	gtagaaaaag	aggaaaaggc	taaagtagaa	3360
	aaagatgaaa	ttcaagaagc	acctcaaatg	gcttctgaaa	cgtctccgaa	acaagcaaa	3420
	cctgctccta	agaagtttc	aactgatacg	aaagtagaag	aaactcaagt	tcaagctcaa	3480
	ccgcaaacac	aatcgacaac	tgttgctgcg	gcagaggcaa	cttcgcacaa	cagtaaacca	3540
	gcggaagaaa	ctcaaccaag	tgaaaaaact	aacgctgaac	ctgtaacgcc	tgtagtatca	3600
10	aaaaatcaaa	cagaaaaatac	gaccgaccaa	ccaacagaaa	gagagaaaa	ggctaaagta	3660
	gaaacagaga	aaactcaaga	acccctcaa	gtggcttctc	aagcgtctcc	gaaacaggaa	3720
	cagtctgaaa	ctgttcaacc	gcaagcagtg	cttgaaagtg	aaaatgttcc	gactgttaat	3780
	aatgcagaag	aagttcaagc	tcaactgcaa	acacaaacaa	gtgcaacagt	aagcactaaa	3840
	caactgcaac	cagagaatttc	aataaatact	gcagttcgaa	ccgcaataac	agaaactgct	3900
15	gaaaaatccg	ataaacacac	aacggaaact	gcggtctcga	ctgaagatgc	tagtcagcat	3960
	aaagcgaata	ctgttcgga	taattctgtg	gcaataaatt	cagaaagcag	tgatccaaag	4020
	agtagacgtg	gaagaagtat	tagccagcct	caagagactt	ctgctgaaga	aacaacagca	4080
	gcttctactg	acgaaacaac	aatagctgat	aattcaaaac	gcagtaagcc	aaatcgtaga	4140
	agtagaagaa	gtgttcgctc	ggaaccaact	gttacaaatg	gcagcgatcg	ttctacagta	4200
20	gcattgcgcg	atctcacaa	tacaaacaca	aatgcggtaa	tttctgatgc	aatggcaaaa	4260
	gcacaatttg	ttgcattaaa	tgtggggaaa	gcagtttctc	aacatattag	ccagttagaa	4320
	atgaataacg	aggggcaata	taacgttttg	gtatctaata	cttcaatgaa	cgaaaattat	4380
	tcctcaagtc	aatatcgctg	ttttagttct	aaaagtacgc	aaactcaact	tggttgggat	4440
	caacaatct	caacaatgt	tcagttaggt	ggcgtgttta	cttatgttcg	caatagtaac	4500
25	aacttttgata	agggcaagcag	taaaaatact	ctagcacaa	tttaatttcta	ttctaaatat	4560
	tatgaggata	atcattggta	tttgggcatt	gatttaggct	acggcaagtt	ccaaagcaac	4620
	ctaaaaacca	atcataatgc	gaaatttgct	cgccatactg	cacaatttgg	tttaaccgca	4680
	ggcaaagcat	ttaatcttgg	caattttggg	attacgcca	tagtaggcgt	gcgttatagc	4740
	tattttatcaa	acgctaattt	tgcatatgat	aaagatcgca	ttaaagttaa	tccaatatct	4800
30	gtcaaaacag	cctttgctca	agttgattta	agttatactt	atcacttagg	cgagttttcc	4860
	gttacgcca	ttttgtctgc	tcgatatgat	acaaatcaag	gcagcgga	aattaatgta	4920
	aatcaatatg	attttgctta	caacgtggaa	aaccaacagc	aatataacgc	agggcttaaa	4980
	ttgaaatatc	ataatgtgaa	attaagtcta	ataggcgat	taacaaaagc	gaaacaagcg	5040
	gaaaaacaaa	aaactgcaga	attaaaaacta	agtttttagtt	tttaa		5085
35	<212> Type : DNA						
	<211> Length : 5085						
	SequenceName : SEQ ID 467						
	SequenceDescription :						
40	Sequence						
	-----						
	<213> OrganismName : Haemophilus influenzae Rd						
	<400> PreSequenceString :						
45	atggcattag	taaacaaaat	taaaacatta	tcatcagtag	gtattctagc	ggctacatta	60
	tttcttgcag	gctgccaaagc	acaatcaaat	atattagcat	ttacaccgcc	tgaccaaagt	120
	gcttcaatga	atgttaatcg	aactgcggtt	gtatctgtga	caacaaaaga	tagccgtgca	180
	atacaagaga	ttgcgagtta	tacgaaacac	ggggaaactga	ttaaattaaa	tgcatcccca	240
	agtgttacac	aattatttca	gcaagtgatg	cagcaaaatt	taattagtaa	agggttttaga	300
	gttggggcaat	taaatgggttc	aaatgcgtgg	gtaactgtgg	atgtgcgtga	atttggtacg	360
50	caagtagaac	aaggtaatct	tcgttataaa	cttaatacca	aaattcaagc	gacagtttat	420
	gtacaagggtg	cgaaagggttc	gtataataaa	tcatttaattg	tcacgcaactc	acaagagggc	480
	gtatttaaatg	cgggcaatga	tgaaattcat	aaagtgtcat	ctcaaaacttt	taatgatatt	540
	gtgaacaata	tttatcaaga	tcaagaagtt	gcggctgcga	taaaccaata	ttctaattaa	600
55	<212> Type : DNA						
	<211> Length : 600						
	SequenceName : SEQ ID 468						
	SequenceDescription :						
60	Sequence						
	-----						
	<213> OrganismName : Haemophilus influenzae Rd						
	<400> PreSequenceString :						
65	atgctgtgct	ggattggcta	caaaaatggg	attttaccgc	agcagaacag	cacgctatat	60
	ccttggctga	atccgtcaaa	gtgcggcgta	atttttgatg	gttttcaact	tgtgggcgat	120
	gatttcaatt	cagatcaaac	ggctgaaaat	acatcgccag	cttggcaagt	gctttacaca	180
	acccatttac	aaagttgctc	gccgattcat	agtggagaaa	atttcgcacc	catccctttg	240

```

tataaacaac taaaaaatca accgcaccta agccaagatc tgattaaatg gcaagaaaat 300
tggcaagcct gcgatcaact acaaatgaat ggtgcggtat tagaacaaca atctttggca 360
gaaatttccg atcatcaaag tacgctttca aaacacggac gatatttagc tcaagaaaata 420
gaaaaagaaa ctggcatacc gacttactat tatttatatc gtgtaggtgg gcaatcttta 480
5 gaatctgaaa aatccccgtt ctgcccttct tgtggtgcaa attgggcgtt aaaagacgcg 540
atctttgata cctttcattt taaatgcgat acctgtcgat tagtttcgaa tctatcgtgg 600
aattttttgt aa 612
<212> Type : DNA
<211> Length : 612
10 SequenceName : SEQ ID 469
SequenceDescription :

Sequence
-----
15 <213> OrganismName : Haemophilus influenzae Rd
<400> PreSequenceString :
ttgggtgcat ttgcctttgc ttctgttaca aatgcgaata tttatgctga gggcgatatc 60
ggtttatctc aaactaaaagc aaacggtagt aacaatacaa gagttggacc tcgcgatatcc 120
gtgggttata aagtaggaaa tacacgtgtt gcgggtgatt atactcatca tggaaaagtt 180
20 gatggcacia aaattcaagg tttaggtgca tcagtattat atgattttga caccgaattct 240
aaagtgaac cttatgttgg tgctcgtgta gcgactaatc aatttaaata caccaatcgc 300
gcagaacaaa agtttaaaag ttcttctgat attaagctcg gatatggggt tgtagcaggt 360
gcaaaatata agtttagatg caactggtac gcaaatggtg gagttgagta caatcgttta 420
ggtaattttg atagtaccaa agttaataac tatggtgcaa aagttggtgt ggggtacgga 480
25 ttctaa
<212> Type : DNA
<211> Length : 486
SequenceName : SEQ ID 470
SequenceDescription :

Sequence
-----
30 <213> OrganismName : Haemophilus influenzae Rd
<400> PreSequenceString :
35 atgaaaaaac ttctaatacg aagttttatta ttcggtacga caacgactgt gtttgccgca 60
ccttttgtgg caaaagatat tcgtgtggat ggtgttcaag gtgacttaga acaacaaatc 120
cgagcaagtt tacctgttcg tgctggtcag cgtgtgactg acaatgatgt ggctaataatt 180
gtccgctctt tattcgtaag tggctgattc gatgatgtga aagcgcacat agaaggcgat 240
gtgcttgttg ttacgcttgt ggctaaatcg atcatttcag atgttaaaat caaaggtaac 300
40 tctattattc ccaactgaagc actaaaacaa aacttagatg ctaacgggtt taaagttggc 360
gatgttttaa ttgcagaaaa attaaatgaa ttgtccaaaa gtgtaaaaaga gcactatgca 420
agtgtagggt gctataacgc aaccgttgaa cctattgtca atacgctacc aaataatcgc 480
gctgaaatth taattcaaat caatgaagat gataaagcaa aattggcatc attaactttc 540
aaggggaacg aatctgttag tagcagtaca ttacaagaac aaatggaatt acaacctgat 600
45 tcttgggtga aattatgggg aaataaaatt gaaggtgccc aattcgagaa agatttgag 660
tcaattcgtg attattattt aaataatggc tatgccaaag cacaatcac taaaacggat 720
gttcagctaa atgatgaaaa aacaaaagtt aatgtaacca ttgatgtaaa tgaagggtta 780
cagtatgacc ttcgtagtgc acgcattata ggtaatctgg gaggtatgtc tgccgagctt 840
gaacctttac tgcagcatt acattttaat gaacttttcc gccgtagtga cattgcagat 900
50 gtgaaaaatg caattaaagc aaaacttgga gaacgcgggt acggtagcgc aacggtaaat 960
tcagtacctg attttgatga tgcaataaaa acattagcga taacccttgt tgttgatgct 1020
ggacgacggt taactgttcg ccaacttcgc tttgaaggaa ataccgtttc tgctgatagc 1080
actttacgct aggaatgccc ccaacaagaa ggaacttggg ataattcaca attagttag 1140
ttaggaaaaa ttcgcttaga tcgtacaggt ttcttcgaaa cagtcgaaaa ccgaattgat 1200
55 cctatcaatg gtagtaataga tgaagtggat gtcgtatata aagtcaaaga acgtaacacg 1260
ggtagtatca actttgggtat tgggtacggt acagagagtg gtattagtta tcaagcaagt 1320
gttaaacaa gataatttctt gggaacaggg gcggcagtaa gtatagctgg tacgaaaaat 1380
gattatggta cgagtgtcaa tttgggttat accgagccct attttactaa agatgggtga 1440
agtcttgggt gaaatgtttt ctttgaaaac tacgataact ctaaaagtga tacatcctct 1500
60 aactataagc gtacgactta tgggaagtaat gttacttttag gtttccctgt aaatgaaaa 1560
aactcctatt atgtaggatt aggccatacc tataataaaa ttagtaactt tgctctagaa 1620
tataaccgta atttatatat tcaatcaatg aaatttaaa gtaatggcat taaaacaaat 1680
gactttgatt tttcttttgg ttggaactat aacagcctta atagaggcta tttcccaact 1740
aaaggggtta aagcaagtct tgggtggacga gttactattc cagggttctga taacaaatac 1800
65 tacaactaa gtgcagacgt acaggggttc taccatttag acagagatca cctctgggtt 1860
gtatctgcaa aagcatctgc aggatatgca aatgggtttg gaaacaagcg tttaccgttc 1920
tatcaaaact atacagcggg tggcatcggg tcattacgtg gttttgctta tggtagtatt 1980

```

ggacctaacg caatttatgc agaacatggt aatggtaatg gtactttttaa gaagataagt 2040  
 tctgatgtga ttggtggtaa tgcaatcaca actgcgagtg cagaacttat tgtaccaaca 2100  
 ccgtttgtga gtgataaaag ccaaaatata gtccgaacct ccctatttgt tgatgcggca 2160  
 agtgtttgga atactaagtg gaaatcggat aagagtggtg tagataacaa tgtattaaaa 2220  
 5 agcttaccgg attatggcaa atcaagccgt attcgcgcct ctacaggtgt cggattccaa 2280  
 tggcaatctc ctattgggccc attggtattc tcttatgcc aaccaattaa aaaatatgaa 2340  
 aatgatgatg tcgaacagtt ccaatttagt attggaggtt ctttctaa 2388  
 <212> Type : DNA  
 <211> Length : 2388  
 10 SequenceName : SEQ ID 471  
 SequenceDescription :  
 Sequence  
 -----  
 15 <213> OrganismName : Haemophilus influenzae Rd  
 <400> PreSequenceString :  
 atgttgaaaa aaacatctct ttttttacc gcacttttaa tgactggctg tgtgcaaaat 60  
 gcgaatgtaa caacacctca agcgcaaaaa atgcaagtag aaaaagtggg taaagcctta 120  
 caaaaaggcg aagctgatcg atatttatgt caagatgata gagttgttcg tgttgtacac 180  
 20 gccacgcata aaaaatacaa aaaaaatttg cattatgtta ctgtcacttt tcaaggcgta 240  
 tcagaaaaaac taaccttaac gatttctgaa cgtggtaaaa attacgcaa tattcgttgg 300  
 atgtggcaag agcgtgatga ttttagtacg ctaaaaacga atctcggcga aattttagca 360  
 acgcaatgtg tctcacaac aagtgaacgc ttatctggac aataa 405  
 <212> Type : DNA  
 25 <211> Length : 405  
 SequenceName : SEQ ID 472  
 SequenceDescription :  
 Sequence  
 -----  
 30 <213> OrganismName : Haemophilus influenzae Rd  
 <400> PreSequenceString :  
 ttgagaatta ttattatttt ttttatggga ttaaataatga ccaatttttag attagaacgt 60  
 gcttgccat tccgttatgc ttgggctaac ggcaggtggt gcttatgcag ctcaaccaac 120  
 35 caaccaacca accaaccaac caaccaacca accaaccaac caaccaacca accaaccaac 180  
 caaccaacca accaaaatag taatgtttct gaacaactag aacaaaataa tgtatctggt 240  
 tctaccgaaa taacgtgata aaaaacacca caaaaatttg ctgaaacggt aaaaacagct 300  
 aaaacgctgg aaagagaaca agcaacaac attaaagaca tcgttaataa cgaaacgggc 360  
 gttactgttg ttgaagctgg acgttttggg caaagcggtt ttgccattcg tgggtgtagat 420  
 40 gaaaatcgtg tagcgattaa tattgatgga ttacgtcaag ctgaaacctt atcttctcaa 480  
 ggctttaaag agctttttga aggttatggt aatttcaata acacgcgtaa tgggtgcagaa 540  
 attgaaacct taaaagaagt aaatatcaca aaaggggctg attctattaa gaatggtagt 600  
 ggttccttag gtggttctgt aatttataaa acaaaagatg cgagagatta tctcataaac 660  
 aaggattact atgtaagtta caaaaaggga tacgtctacg aaaaataatca atcattcgat 720  
 45 acccttactc ttgcaggacg ttataaaaag ttcgatgtgc tagtggttac aacaagcaga 780  
 aatgggcatg aacttgagaa ctatgggttat aaaaattata acgataaaat tcaaggtaaa 840  
 aaaagagaaa aagcagatcc atataaaatt gaacaagata gtacattatt aaaattatct 900  
 ttcaatccta cagaaaatca tcgttttacc tttgcgcgtg atttatatga acatcgttct 960  
 cgtgggcaag atttatccta tacattaaaa tatcaacgta gtggaatga aacctctgaa 1020  
 50 gttgattcta gacacaccaa tgataaaaca aagagacgta atatttcatt tagttatgaa 1080  
 aatttctctc aaactccatt ttgggatacg ctaaaactca cttattctga tcaacgtatt 1140  
 aaaactcgtg cacgcacaga tgagtattgt gatgctgggt taagacattg tgaaggcaca 1200  
 gacaatccta cgggactaaa agtaacaaat gggaaaataa cacgtcgaga tgggttcagac 1260  
 cttcaatttg agggaaaaaa caatacagct aagagtagtg ataaaaccta tgacttcaag 1320  
 55 aaattttattg atactgataa gagagtaata gacgataaac tagtcctaaa caaccctct 1380  
 gacacttggg atgattgttc aatattttaat tgtgaaaata acgcaaaaat aaaagttttt 1440  
 aaaggttaaca attattatgg ctatgatgga aatgggaaag aagttagacct tgaaataaaa 1500  
 gaattaaatg gcaaaaaatt cgctaaaata aaggataatg ataggaaaat aaaatctatt 1560  
 cttccctctt cacctgggta tttagaacgc ctctggcaag agagagattt ggacaccaac 1620  
 60 acccaacaat taaattttaga ttaaccaaaa gacttcaaaa tttggcatat tgaacataat 1680  
 ctacaatatg gtggatcata taataccgcg atgaagcgca tgggttaatcg tgctggcaac 1740  
 gatgcttctg atgtgcaatg gtgggcaaca cctacgcttg gtgaggattc ttggactgga 1800  
 aaacctcaca cttgtgcaac gacttatgag tggaatgcta acctttgtcc tcgagttgat 1860  
 cctgaatttt cttacttatt acccatthaa acaacaggaa aatcagctca tctctttgat 1920  
 65 aattttgtta taactgatta tttatctttt cttttgggtt atcgttatga caatatccat 1980  
 tatcaaccaa aatataaaca cggtatcaca cccaaattac cggatgatat tgtgaaagga 2040  
 ttattttattc cattaccaaa caattcaaat tcagatccta ataaagttaa ggaaaaatgta 2100

caacaaaaata ttgactatat cgccaaacag aacaaaaaat ataaagcaca ttcttatagt 2160  
 tttgtttcaa ccattgatcc aacgagtttt ctctgtttac aactaaaaata ttctaaagggt 2220  
 tttagaacac caacttcaga tgaaatgtat ttcaccttta aacacctga tttcactatt 2280  
 ttgccaaata ctgattttaa accgaaata gcaaaaacca aagaatttgc tttcacatta 2340  
 5 cataatgatg attggggatt tatctcgaca agtctgttta aaactaacta taaaaacttt 2400  
 attgacctaa tatttaaaaa gcaagaaact tttaaagtag gcggtcttgg aagagggtgaa 2460  
 acattaccat tttctcttta tcaaaatata aatagagata atgctgtctt aaaagggtatt 2520  
 gaaatttaatt caaaagtatt ccttgggtaaa atggcaaaaat ttatggatgg atttaacctta 2580  
 agctataaat atacctatca aaaaggcaga atgaatggca atattcctat gaatgcaatt 2640  
 10 cagcctagaa ctatgggtata tgggttttaga ttgatcatc caaatcataa atttgggtttc 2700  
 gattttctata cgacacatgt agcaagttaa aatccagaag atacttataa tatgtttctat 2760  
 aaagaagaaa ataaaaaaga cagcacaatt aatgggagaa gcaaatctta tactattcta 2820  
 gatttaattg gatattgtaca accaatttaa aatttaacca taagagctgg tgtatataat 2880  
 cttacaatacc gtaaatatcat tacttggggt tctgtctgtt caattcggtt atttgggaaca 2940  
 15 agtaatgtta tagatcaatc aacaggatta ggcattaacc gcttctacgc accagggtaga 3000  
 aattataaaa tgtcagttca gtttgaattt taa 3033  
 <212> Type : DNA  
 <211> Length : 3033  
 SequenceName : SEQ ID 473  
 20 SequenceDescription :  
 Sequence  
 -----  
 <213> OrganismName : Helicobacter pylori, strain J99  
 25 <400> PreSequenceString :  
 atgacttata gaaatggcaa aatagattta aaggaaacgct ttagtaaaaa ccgctctttt 60  
 aagggcatta aaaagaaaat cgctaaaaaa tatacaatca aaaactcgct ttctataatt 120  
 tattccttaa aaacgcattc aaattcttct ctatccatta ataaaaaaat cttcttaggg 180  
 ctagggttcg tttcggcttt gagcgcctca agtgaagatt ataatagttc ggtgtatttg 240  
 30 ctcaaatagcg tgaatgaaa caataataac aaatcctact atattagccc cttacgcact 300  
 tgggctgggg ggaataggag ttttacgcaa aattataaca atagtcaatt atacataggg 360  
 acaaaaaacg cttccgcgaac gcccaatcat tcttctgtgt ggtttggaga aaagggtat 420  
 atcgggtttta ttacagggggt ttttaagggt agagacattt ttatcacagg agctgttgga 480  
 tcgggtaatg agttaaaaac cgggtggggg gcgactactg tttttgaaag ctcaaacgaa 540  
 35 ctaaccacta acggggctta ttttcaaaat aacagagccg ggacacaaac ttcttggatc 600  
 aatttgattt ccaataacag cgtgaatttg acaaacacgg attttggcaa tcaaacccct 660  
 aatgggggct ttaattgttat ggggcgaaag attacttata atgggtggag cgtcaatggg 720  
 gggaaattgtt ggaattgata cgtggatagc aatggcgcaa ccaccattag cggggttaact 780  
 40 ttcaacaata acggtgcgct cacttataag ggtgggaatg gtattggagg gagcatcact 840  
 ttactaact ctaatatcaa tcattacaag ctcaatctta acgctaatac cgttaccttt 900  
 aataacagca ctctaggag tatgcctaata ggcaacgcta acactatagg gaatgcctac 960  
 attcttaatg caataataat tacttttaata aatttgacct ttaattgggg ttggttcgtt 1020  
 tttaatagat ctgatgtcga tggttaattt caaggcacia ctacgatcaa taacccact 1080  
 tcaccctttg tcaatatgac cggtaaaagt accattaatc ctaatgcgat ttttaatat 1140  
 45 caaaattaca cgcccacgag agggaaacgct tacacgctct ttagcatgaa aaatggcaat 1200  
 atcgtttatg aatgatgtga taatttatgg aatattatca ggcttaaaaa cagcgaagcc 1260  
 acaaaagaca atagcaaaaa cgccacttcc aataacaaca cccacactta ctatgtaact 1320  
 tacaatttag gcggcacgct ctatcatttc aggcgaattt ttagccctga ttccattggt 1380  
 50 ttacaatccg tctattatgg cgcaataat ctttactaca ccaatagcgt gaatatccat 1440  
 gacaatgtct ttaattttaa aaatattaac gatgatagg ctgatacgat tttttatctt 1500  
 aatggcttga acacttgga ttacacgcaa gcgagattcg ctcaaaccta tggcgggaaa 1560  
 aacagcgctt tagtctttaa cgccacgact ccttgggcta atggtgcgat ccctaaatct 1620  
 aacagcacgg tgcggttttg ggggtatgag ggagtcattt gggggaaaaa gggctatatc 1680  
 accggcaact tcacagccga tagggtttat atcacggta acatgatgtc tggcaatggc 1740  
 55 gctcaaacgg gtgggggggc gactttgaat tttgtgggcg cgactgaaat taatatcgct 1800  
 ggagccactt ttaaaaactt aaaaaccact tcacaaaact ottacatgac ttttatggcg 1860  
 ttagggaatg gctctgggag tggtaagatc aatgtttctc agtctgattt ttacgattgg 1920  
 acggatggag ggtatgattt taccggtaat ggcgtttttg acagcgtgaa tttcaacaag 1980  
 60 gcttattaca aatttcaagg cgctgaaaat tcttacaatt ttaaaaaacac gaatttttta 2040  
 gcagggaatt tcaaatcca gggcaagacc accattgaaa aatccgtttt aaacgacgct 2100  
 tcttacgctt ttgatggcgt gaataacgcc tttaatgaag acaaatttta tggcggatcg 2160  
 tttaatttca accacgcaga gcaaacaaac gcttttaata acaactcggt tagtggcgga 2220  
 tcgttttagtt ttaacgcaa gcaagtggat tttaatggga attcgtttta tgggggggtg 2280  
 65 tttaatttca ataatacccc taaagccagt tttactaacg acacttttaa tgtgaataac 2340  
 caattcaaaa taaatggcgc tcaaacggat tttactttca gtaaggcgct tgttttcaac 2400  
 atgcaagggc ttttgagcag tttgagcgtta ggcacgactt atcaattgct taacgctaaa 2460  
 agcgtggggt ataaggataa caataacgct ttgtatcaaa tgttcgctg gactagcgga 2520

	gaaaatccta	gcggttaaatt	agtagatgaa	aataaaaccg	cgccaaacag	cgctaaaatt	2580
	tataatgttc	aattcactga	taacggcttg	acttactaca	ttaaagaaaa	ttttaataat	2640
	gggatcacgc	tcactcgttt	atgcactcta	ggctacacgc	attgcgtgaa	tattgataac	2700
5	gatgcggtta	atcttaaaaa	tgtcaataat	aacgcctagta	acaccgtgtt	ctatctcaac	2760
	ggcatgacga	cttgggaagac	tgtctggcaca	ggagttttca	cgcaagatta	cagcggcact	2820
	aacagcggtt	tagtgttcaa	tcagaccacc	ccttttcttg	ctggggcgaa	tcccacttcc	2880
	aatagcggtg	tgggtttttg	gaaaacttca	ggggctgaat	gggggctagt	gggctatatt	2940
	caaggcggtt	ttaaagccaa	tcaaatgat	attacccgca	cgattcgttc	tggtaatgga	3000
	gccaaaaccg	gtggggggcg	gacttttagtg	ttaaacgctc	aagagcggtt	gaatatcgct	3060
10	aacgctaatt	tgaataacga	taaagccggt	ttgcaaaact	catggatgaa	tttcatttgt	3120
	aataatggca	atttgaacgt	aacaaacgca	aatttttagca	accaaaccct	gcattggaggc	3180
	tttaacctta	aagccaataa	tatcacttgg	gataaaggct	ctgtgagtgg	gggggggaat	3240
	tttgggtgtg	ataacgcctaa	cgctaattggg	aatgcgggtga	ttaagaatgt	taatttcagc	3300
	gataacggca	ctttgattta	taaagggggc	gaaaacagcg	ccggaaattc	cctgacctta	3360
15	gaaaacaaca	ccttcaattc	ctataatatc	aacgccaaag	cgcaaaacct	tattttcaac	3420
	aacaactcgt	ttaacagcgg	tagctattcg	tttaacgaca	ctaaaaatgt	tacttttaaa	3480
	ggcaccgaaca	cgcgtcattaa	cagcgatcct	ttcagccgcc	ttaaaggatc	agtttctatt	3540
	gacaataata	gtatctttaa	cattgaaagg	gatttgaccg	ataaaaccac	ttacacgctt	3600
	ttaagtgggg	ataacatcaa	atacaataac	caagcttttag	cggaataatgt	tttttcaaaa	3660
20	aattttatggg	atttgcacga	ttatgacggc	gaacaaggga	ctctatttaag	aacggataac	3720
	aacacttatt	ttgttgcatt	cacgcagagc	aacggccaaa	aatttggttt	tgaagagact	3780
	tttaatcctg	gctctatcac	ctataaata	ttcactatcc	attcttcgcc	tttccacaca	3840
	gaagctgatt	ctaaggatat	ttggaatcag	gtgagggaagc	agtttgattt	tattccaggga	3900
	aaaaccccg	tgtgcgttgg	cgtgtgctat	atcgcacctt	ataaaaaatca	agatcttatc	3960
25	ggctctagcg	cttttgcgtg	gtcgtgtaat	tttggggcta	cggtgggtggg	gactttgctt	4020
	ttagggagcg	ctcaagaaaa	agccaataac	aatggcgggt	cgatctggtt	tggtaagaat	4080
	aatttgcgtg	atttgcattg	caattttaac	gcgactaata	tctttttaac	gaataacttt	4140
	aatgtcggca	accctaacgc	cggcgggtggg	gcaacgatta	attttaacgc	tgatgaaacc	4200
	ttgagcgctg	acgggttgaa	ttacacgaat	ttccaaaccg	tggctatggg	cttacaacct	4260
30	agcgcgagcc	agcattcatg	ggcgaatttt	aattccaagc	tttctatgga	gattaaaaaac	4320
	tccaacttta	gggatttcac	atggggaggc	tttaggttca	attcagggcg	tatcactttt	4380
	gaaaacacca	cttttagcgg	ctggactaat	attaaacggg	cgactgaaag	cggttcatcg	4440
	tatgtgaaca	acgggttgaa	tacggatttg	attttcactg	attccatttt	aggagggggc	4500
	attcgcctatg	atttgaaggc	taataacatt	attttcaata	acactcaa	ggtggttgat	4560
35	gtgtctaaaa	acgtgaatca	gtcttcattg	aatgggaatg	ttactttcaa	tcattccagg	4620
	ctttcagtca	aacccaatgc	ggctatcaat	attggggggg	atcagaccca	aacgacttta	4680
	gaaaacgctt	atgctgcttc	ttttataac	gatagcgtag	cgaattttta	cggcacgacc	4740
	gcttttaacg	gggtgtctta	cttgaattta	aacctaacg	ctcaagtcag	cttcaatcaa	4800
40	gcgaatttca	ataacgctaa	tgtaaccttt	tatggcattc	cgctatttgg	taaaacgccc	4860
	aatttttgga	actctgtgcg	ccttatcaat	ttcaaaagg	acgcaaagt	taatacagcc	4920
	acgtctcaat	taaggcgtaa	aaatatccat	ttgaatttcc	aaggggcttc	cacttttgaa	4980
	aataactcta	cgatgaattt	ggctgaaagt	tctcaagcga	gctttaacgc	tcttagcgtg	5040
	gagggggaaa	cgaatttcaa	tctcaacggc	tcaagtttat	tgagtttcaa	tggtaacagc	5100
	gtttttaacg	ccctgtgtaa	tttctacgct	aataattctc	aaatttcttt	cactcattcg	5160
45	gcgactttta	atgcagacgc	ttcatttgat	ttaggcaata	acagcacctt	gaattttcaa	5220
	agcgttcttt	taaacagcgc	tctaaacctt	ttaggcaatg	gcggtaacaa	tctagcgatt	5280
	aatgctaaag	ggaatttttag	ttttggatct	caagggaattt	tgaatctgtc	ttatatgaat	5340
	ctatttggag	gggataaaaa	agcttccggt	tatgatgtgt	tgcaagccca	aaatatgtat	5400
	ggcttaagg	ggaataacgg	ctatgagaag	atccgttttt	atggcataca	gattgaaaag	5460
50	gccgattact	cgttcaataa	tggcgttcat	tcttggagct	tcactaacc	gctcaacacg	5520
	actgaaacca	ttacgcgaac	cttacataat	aaccgcttga	aagtgcagat	ctctcaaaac	5580
	ggtgcttcta	ataatgcgat	gtttaatctc	gctcctagct	tgtatgatta	ccaacaaaac	5640
	ccttatgatg	aaagcgagaa	ttcctataat	cacacaagcg	ataaagccgg	cactttattat	5700
	ttgagttagca	gtatcaaagg	ctttggtaag	aataatgaaa	tacccgggac	ttataacgcg	5760
55	caaaaccaac	ccttacaagc	tttacacatt	tataatcagg	ctatcagtaa	gcaggatttg	5820
	aacatgatcg	ccagtttggg	taaggaattt	ttgcctaaag	tggctaaact	tatcgcttca	5880
	ggggcgttag	acaatctcaa	tctcaatagc	ccggatagct	ttgaaacgat	ttttagtatc	5940
	ttaaaagaat	atggcattac	tttaaaccaa	cgaatttgga	agagcttatt	gaagatcatc	6000
	aataattttt	ctaacacggc	taattatcat	ttttctcaag	gtagtctcgt	tgtggggggc	6060
60	atcaagaag	ggcaaacgaa	cacgaatagc	gtggtgtggt	ttggggggcg	tgggtataaa	6120
	aatccatg	cgggtgggga	taacacttgc	catagtttca	ggcagactaa	tttagggcag	6180
	ttgcttaatt	ctagcgtgcc	ttatttgggt	tacatttaac	ctaattttta	ggctaaaaac	6240
	atttatatca	ccggaacat	cggcagtggt	aacgcttggg	ggagcggagg	gagcgcgaat	6300
	gtgtcttttg	aaagcgcgac	aaatttgggt	cttaatacag	ccaatattga	cgctcaagg	6360
65	accgataaga	tcttttctta	cttgggcaaa	gagggcattg	ataagctttt	tggagaaaaa	6420
	gggttaggga	atgtgtcttc	taatttgggt	tatgaagaga	gcttgaatga	taacgctatc	6480
	cctaaagatt	tagccaacat	gatccctaaa	gatttgggat	ctaaaacttt	aagctctttg	6540



```

cttagcccta ctgaagtga taacctctta ggcgtgagtg cttttaaaaa cgcgatcatg 6600
gaaatcttaa attctaaaac ggtgggagat gtttttggtg aaaacgggct tttaaacgcg 6660
ctagatcctg taaaaagaaa agaaattgat caaatgcttt tagagcaaat ccaagcccat 6720
tcttcagggt ttgaaaaatt catcggttaa accttaggga ttgaaaatgt agagaatttc 6780
5 atcaataact ggtatggcaa gcaaaagctg agttcttttg ccaataattt tgtgcttgga 6840
ggcttgaatc aagccctaga taaaataggt tctagctctg atgccaaaga cttacagagt 6900
ttcttagata aaacgacttt tggggatatt ctcaatcaaa tgatcaatca agccccttta 6960
atcaataagc tcatttcttg gctcggcccg caggatttga gcggtgtagt gaatatcgct 7020
ttaaactagta tcaactaacc tagtaaggaa ttattgggtg cgatttcttg catgggtcaa 7080
10 aaagtgcgtg acgatttgct aggcgaaggt gtagtgaata aaatcatgag caatcaagtt 7140
ttagggcaaa tgatcaataa aatcatcgct gataagggct ttggaggcgt ttatcatcaa 7200
ggcttaggct caatactccc taaatcctta caagatgagt tgaagaaatt gggtaggggc 7260
tctttactca aacctaaagg cttgcacaa acctggcaca aagggaactt caatttctg 7320
gctaaaaacc atgtgtttgt gaataacagc ttgttttagt acgccacagg gggggaattg 7380
15 aattttgtag cgggcaagtc cattattttt aatgggaaaa acaccattaa ttccacgcag 7440
tatcagggca ggcctttctt tgtatctaaa gatttttcta atatttcatt agacacttta 7500
aacgctacga tgccttaacc gcttaacgct ccttaaaaatg atattagcgt tcaaaaaggt 7560
caaatttgcg tgaatgtcct agattgcatg accgctaaag ggaaaaaccac tcaaaactaat 7620
tcctcttcaa gcgcgacagc cccaactaat gaacgcctag aagtgcgtgc gaataatttc 7680
20 gctttcttag gcaccattaa ggctaattgga ttagtggatt tttcaaaagt cttacaaaaa 7740
acgactatcg atgcttttga tttagggcca tctgctactt ttaaagcgaa taatttgatc 7800
gtgaataacg cttttaataa taactcta taacagggcta atatcagcgg taatttcaat 7860
gtggccaagg gtgcaacttt tagcacgaat gaaaatggtt tgaatgtggg ggggaatttt 7920
aacagcgaag ggccattaat ctttaactct aataacccca cccatcaaac gattatcaat 7980
25 gtaactggca cttctacaat catgtcttat aacaatcaag ctttaatcaa ctttaacacc 8040
caactcaagc aaggcgctta tacgcttatt aacgctaata gcatggttta tggctatgat 8100
aatcaaacga ttcttggggg gagcttgagc gattacctca aactttacac tctcattgat 8160
tttaacggca aacgcagcga attgaatggc gatcggttaa gctatgacaa ccaaccggtc 8220
agtattaaag atgggggtct tgtggttaagc tttaaagaca atcaagggca aatggtgat 8280
30 tcatctatcc tttatgataa aatccaagtt accgtctctg ataaacccat gagcattcaa 8340
gccctagatt tggagtatta tgttaaacgc attcaaggta gtgctgggtt gaatgcgatc 8400
aaatctgcgg gcaataattc cattatgtgg ttgagtgcgc tttttgcggc taaggggggt 8460
aatcccttgc tgcgccctta ttatttgcaa gacaatccca ctgaacacat tgttacttta 8520
atgaaagata ttaccagcgc tttaggaatg ctctctaact ccaatctcaa aaacaactcc 8580
35 actgatgttt tacagctcaa cacttacacg caacaaatga gccgttttagc caagctttct 8640
aatttcgctt cttttgatcc aacggatttt agcgaacgct tgagcagtc taaaaaccaa 8700
agatttgcgg atgctgtccc taatgcgatg gatgtgatt taaaatactc tcaaagggat 8760
aaactaaaaa acaacctttg ggcgaccggg gttgggggag tgagctttgt ggaaaatggc 8820
acaggaacgc tctatggtgt caatgtgggc tatgatcgct ttgtagagg ggtaatgtgt 8880
40 ggaggggatg cggttatagg gtatagcggg ttttatgagc gcatcactag ttctaaatcc 8940
gataactgtg acgtgggttt gtatgctagg gcttttatca aaaagagcga gctgactttt 9000
agcgttaatg aaacttgggg ggctaataaa acccaaatca gctccaacga cgctttgctt 9060
tctatgatca atcagtccta taaatacagc acatggacaa cgaacgcgaa agttaattac 9120
gggtatgatt tcatgtttta aaacaaaagc atcattttaa aacctcaaat tggtttaagg 9180
45 tattactata ttggtatgag cggtttagaa ggggtgatga ataactgct ctataaccag 9240
tttaaagcga acgccgatcc gtctaaaaaa tccgttttaa cgattgattt tgctttggag 9300
aaccgccatt atttcaacac aaactcttat ttttatgcga ttggtggcgt tggtagagac 9360
ttgttagtta attctatggg ggataaattg gtgcgtttta ttggttaaaa cactttgagt 9420
tacaggaagc gcgatcttta taacactttt gcgaacatca ctacaggcgg ggaagtggag 9480
50 ttgtttaaaa gcttttatgc gaacgctggg gtgggggcta ggtttggatt ggattacaaa 9540
atgatagata ttataggaat tattggaatg cgttttagcgt ttttaa 9585

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 9585

SequenceName : SEQ ID 474

55 SequenceDescription :

Sequence

-----

```

<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
60 atgaaacaat ttaaaaagaa accaaaaaag ataaaacgat cgcacaaaaa tcaaaaaaca 60
atcttaaagc gtcctttatg gcttatgcct ttactgattg gcgggtttgc tagtgggggtg 120
tatgcgggat gaacagacat tttggggcct agttgggggg aaaaaagcca aaagggtatgc 180
gtgcatcgct catggtatgc tatatggagt tgcgataaat gggaggaaaa aacacaacaa 240
65 ttacaggaa accaactcat cacaaaaact tgggcagggg gtaatgcggc taactactac 300
cactctcaaa acaaccaaga catcacagcc aatttaaaaa atgataacgg cactttattt 360
ttaagcggtc tgtataacta caccggaggg gaataataat ggggggaattt agacattgaa 420

```

	ttaggcagta	acgctacttt	taatctaggt	gcgagtagtg	ggaatagctt	cacttcttgg	480
	tatcctaattg	ggcatactga	tggtactttt	agcgctggga	ctatcaatgt	gaataacagc	540
~	gtagaagtgg	gcaatcggtg	gggatcgagg	gctggcacgc	acaccggcac	agccacttta	600
	aacttgaacg	ctaataaggt	tactatcaat	tccaatatca	gcgcgtataa	aacttcgcaa	660
5	gtgaatgtag	gcaatgctaa	cagcggtatt	accattaatt	cggtttcttt	aaatggggat	720
	acttgcagtt	cttttagctag	gggtggcgta	ggggctaatt	gctccacttc	tgggcctagc	780
	tattctttta	aagggacgac	taacgctact	aacacgactt	ttagcaattc	aagcggcagt	840
	ttcactttttg	aagagaacgc	cacttttagc	ggggcgaaa	taaatggggg	ggcattcact	900
	ttcaataaaa	agtttaacgc	taccaataat	accgctttta	atagcggtag	ttttactttt	960
10	aaaggcaca	gctcttttaa	tggtgcgaat	tttagtaacg	cttccataac	ttttaataat	1020
	caagccactt	tccaaaacag	ctcctttaat	ggggggactt	ttacttttaa	tgaccagacc	1080
	aatcaaagca	cccagcaccc	ccaaattcaa	aacagctctt	ttagcggcag	tgctaccact	1140
	cttaagggtt	ttgcgacttt	tgagcaagcc	tttaacaatt	caaaccacca	actaacgata	1200
	caaaagcgtt	cttttaataa	cgctactttc	aacaataccg	gtaaaaatcac	tatagaaaaa	1260
15	gatgcgagct	tttaataacac	ttcgttcaac	actcctgttg	atacaaaaca	catgactatt	1320
	agtggtggcg	ttacttttaag	cggtaaaaat	gacttgaaaa	atgggtgcaac	ccttgatttt	1380
	gggagttcta	aaatcactct	cactcaaggg	acgactttca	acctcacaag	tttaggcagt	1440
	gagaagcagc	taacgatttt	aaattctaga	ggtgggatca	cttacaatca	tccttttaaac	1500
	catgcgatca	atagcttgac	aaacgcccta	aaaacgaacg	aaagctcttc	aaaaccgcaa	1560
20	agtttcgctc	aaggttttgtg	ggatatgatc	acttacaatg	gggttacccg	gcagcttttg	1620
	aatgaaaacg	ctgcaacatc	taaacccact	gactcttcgc	cctctaaatc	ctctacaaac	1680
	tctacgcaag	tctctcaagt	gggttacaaa	ataggggata	ctatctacaa	actgcaagaa	1740
	actttcagcc	acaattccat	tattattcag	gctttagaga	gcgggactta	cacgccaccc	1800
	cctgtcatta	acggctccaa	atttgactta	tcgcgttcaa	attatatcaa	tgctgacatg	1860
25	ccttggtata	accataaata	ttatattcct	aaatcccaaa	attttacaga	gagcgggact	1920
	tattacttgc	cgagcgttca	aatatggggg	agctacacta	actcgtttaa	acaaaccttt	1980
	agcgcaagta	atagcaatct	gggtgattggg	tataacgcaa	catggactga	tcacaatggt	2040
	tcttctagcg	acacgggtggc	ttttggggac	acttcaggga	gcgctcttaa	tgggcattgc	2100
	gggccttgcc	cctattacca	atgcacaggc	acgactaacg	gcacttatag	cgcttatcat	2160
30	gtctatcatc	cagcgaatct	gcgttctggc	acgcttatag	gcaccggtgg	ggcagccaat	2220
	ctaactcttta	atggggtaga	tagtatcaat	atcgctaacg	ctaccatcac	gcaacataac	2280
	gccggggctt	attcaagctc	tatgactttt	tccacgcaaa	acatggacaa	ttcgcagaat	2340
	ttgaatggcc	taaattctaa	cggcaagctt	ttggtgtatg	gcacaacttt	cactaaccac	2400
	gccaaagacg	ggaatttcac	tttcaatgca	gggcaagcga	cttttgaaaa	caccaacttt	2460
35	aatggaggga	gttaccat	cagcggcgat	agcttgaatt	tttcaaataa	caaccagttc	2520
	aatagcgggt	cgtttgagat	tgggcgcaaaa	aatactat	tttaataacgc	taatttttaac	2580
	aacagcactt	cttttaattt	caataattct	agcgcgacca	cttcgtttgt	gggggatttc	2640
	actaacgcta	atcgaatttt	gcaaatcgct	gggaacgctg	tttttgggaa	ctctactaat	2700
	ggctctcaaa	ataccgctaa	ttttaataat	accggctctg	ttaatattgc	aggggaatgca	2760
40	acctttgata	acgtgggtatt	taacagccct	acgaacacga	gcgtgaaagg	gaaagttaact	2820
	ctcaataaca	tcacttttaa	aaacttgaac	getcctttgt	cttttggcga	tgggacgatt	2880
	gtttttagcg	gattaatatt	ggtaagcta	tcacaaatgg	tcacaaatgg	caaccctatc	2940
	acccttgtaa	gctcttctaa	agcaattgaa	tacaacgacg	ctttcagtaa	aaatctatgg	3000
	cagctcatca	actaccaagg	gcattgggct	agcagtga	agctcgtttc	tagtgccgggt	3060
45	aatggcgctc	atgatgtggg	gtattctttc	aacaaccaa	cctacaattt	ccaagaggtt	3120
	ttttaccaca	acagcatttc	tatocggcgt	ttggcgcttg	gcattgggtt	tgattatgtg	3180
	gatatggaaa	aatcggatcg	tttgatttat	caaaacgctc	tcgggtttat	gacctacatg	3240
	cctaataagct	ataacaataa	tttaggggaat	ttaaacaaca	ccatttacta	ttacgacaac	3300
	agcattgact	tttatgcgag	cgggaaaact	ctatttacta	aagcgggaat	ttctcaaacg	3360
50	ttcactgggc	aaaacagcgc	gatcgttttt	ggggctaata	atatatggac	gagcgtaagc	3420
	gatgcgccgc	aatctaattg	gatcattcgc	tttggggaca	ataagggagc	agggagtaat	3480
	gatgcgagtg	ggcattgctg	gaatttgcaa	tgcataggct	ttatcacagg	gcattatgaa	3540
	gcgcaaaa	tttacatcac	cggcagttat	gaaagcggga	accgcatttc	tagcgggtggg	3600
	ggcgcgagcc	tttaattttaa	cgggcttcaa	ggcattcttt	taacgaacgc	gactttgtat	3660
55	aaaccgcgcg	ctggcacgca	aagctcttct	atgaattttg	tttctaacag	cgcgaaacatt	3720
	caggctcaaa	actcctat	tatagacgat	accgcacaaa	ataaaggcaa	ccctaatttt	3780
	agtttcaacg	ctttgaaatc	ggatttttct	aacagctctt	ttagaggcta	tgtggggcaa	3840
	acgcagctcg	tttttaattt	caatgcogtt	aatgcgatca	gtttcactaa	cagctcta	3900
	tttagctctg	gtttgtatca	aatgcaagct	aaaagcgtgt	tgtttgacaa	ttccaattta	3960
60	agcgtttcag	tggggacaag	cagcattaaa	gccaatgcga	tcaatctttc	tcaaaacgcc	4020
	tctatcaatg	cgagcaacca	ttcaacctta	gaacttcaag	gcgatttgaa	tttgaacgac	4080
	accagctcgc	tcaacctcaa	ccaaagcgcc	attaatgttt	ctaacaacgc	cacgatcaac	4140
	gattatgcga	gcttgattgc	gagtaatggc	tctcacctta	attttaacgg	ggcgggtta	4200
	ttcaatttcag	cgaatattac	tacgagtttg	agtagttcct	ctatcggtgt	taagggggcg	4260
65	gtctctttac	gggggcagtt	taattttaagc	aataattcct	cttttagattt	tcaaggctct	4320
	agcgctatca	cctctaacac	ggcgttta	ttctatgata	acgctttttc	tcaaaagccc	4380
	atcactttcc	atcaagccct	tgacattaaa	gtgcccttga	gtttggggagg	caacctctta	4440

	aaccctaaca	acagtagcgt	gctgaattta	aaaaacagcc	agcttgTTTT	tagcgatcaa	4500
	gggagcttga	atatcgctaa	cattgattta	ctaagcgatc	tgaatggtaa	taaaaatcgt	4560
	gtgtataaca	tcattcaagc	ggacatgaat	ggtaattggg	atgagcgat	caacttcttt	4620
	ggcatgcgca	ttaatgatgg	gatttatgac	gctaaaaaac	aaacttatag	tttactaacc	4680
5	cctctcaata	acgcccataa	aatcaccgag	agctttaaaa	ataaccaact	gagcgttacg	4740
	ctctctcaaa	tccggggcat	taaaaacacg	ctctataaca	ttggctctga	aatctttaac	4800
	tacccaaaagg	tttataacaa	cgctaattggc	gtgtattctt	atagcgatga	cgcacaaggc	4860
	gtgtttttatc	tcacgagcag	cgtgaaaaggc	tattacaacc	ccaaccaatc	ctatcaaggcc	4920
	agcggcagca	ataacaccac	gaaaaataac	aatctaacct	ctgaatcttc	tgctatttcg	4980
10	caaacctata	acgcgcaagg	caaccctatc	agcgcgttac	acgtctataa	caaggggcat	5040
	aatttcagta	atatcaaagc	gttagggcaa	atggcgctca	aactctaccc	tgaaatcaaa	5100
	aagatattag	ggaatgattt	ttcgctttca	agtttgagca	atttaaaagg	cgatgcgcta	5160
	aaccagctta	ccaagctcat	cacgcctagc	gattggaaaa	acattaacga	gttgattgat	5220
	aacgcaaca	atcgggtcgt	gcaaaatttc	aataacggca	ctttgattat	aggagcgact	5280
15	aaaatagggc	aaacagacac	caatagtgcg	gtggtttttg	ggggcttggg	ctatcaaaag	5340
	ccttgcgatt	acactgatat	tgtgtgccaa	aaatttagag	gcacttattt	ggggcgagctt	5400
	ttggagtcca	tctcggtcga	tttgggctat	attgacacga	cttttaacgc	taaagaaatt	5460
	tatcttaccg	gcacttttagg	gagcgggaac	gcatggggga	ctggggggag	tgcgagcgta	5520
	acttttaaca	gccaaacttc	gctcattctc	aaccaagcga	atatcgtaag	ctcgcaaacc	5580
20	gatgggatttt	ttagcatgct	gggtcaagag	ggcatcaata	aggttttcaa	tcaagccggg	5640
	ctcgctaata	ttttggcgca	agtggcaatg	caatccatta	acaaagccgg	gggatttaggg	5700
	aatttgatag	taaatcacgt	agggagtgat	agcgtgattg	gggggtattt	aacgcctgag	5760
	caaaaaaatc	aaaccctaag	ccagcttttg	gggcagaata	attttgataa	cctcatgaac	5820
	gatagcgggt	tgaacacggc	gattaaggat	ttgatcagac	aaaaattagg	cttttgagcc	5880
25	gggctagtgg	ggggacttagc	oggactgggg	ggcattgatt	tgcaaaaccc	tgaaaagctt	5940
	ataggcagca	tgtccatcaa	tgattttattg	agtaaaaaag	ggttgttcaa	tcagatcacc	6000
	ggcttttattt	ccgctaacga	tatagggcaa	gtcataagcg	tgatgctgca	agatattgtc	6060
	aagccgagcg	acgcttttaa	aaacgatgta	gccgcttttg	gcaagcaaat	gattggcgaa	6120
	tttttagggc	aagacacgct	caattcttta	gaaagcttgc	tgcaaaacca	gcagattaaa	6180
30	agcgtttttag	acaaagtctt	agcggctaaa	ggattagggg	ctatttatga	acaagggttg	6240
	ggggatttga	tcctaatact	tggtaaaaag	gggattttcg	ctccctatgg	cttgagtcac	6300
	gtgtggcaaa	aaggggattt	tagtttcaac	gcgcaaggca	atgtttttgt	gcaaaattcc	6360
	actttctcta	acgctaattg	agggcagctc	agttttaacg	caggaaattc	gctcattttt	6420
	gccggaaaca	accacatcgc	tttactaac	cattctggaa	cgctcaattt	gttgtcta	6480
35	caagtttcta	acattaacgt	caccatgctt	aacgctagca	acggccttaa	gattaaacgc	6540
	actaataaca	atgtttccgt	gtctcaaggc	aatctgttta	tcaacgctag	ctgcgtgcaa	6600
	caaagcgatc	caacgcacgc	tagcgccaca	aaccttgca	ccaccgctca	aaataacgct	6660
	tcttctagta	atgcgtcaaa	caacgcgcca	atcgcttaa	ataataacga	tgaaaagctt	6720
	gtgggttacgg	cgaatgggtt	caatttttca	ggcaatattt	acgctaacgg	ggtgggtgat	6780
40	ttttcaaaaa	ttaaaggctc	tgcaaacgtt	aaaaacctgt	atctttacaa	taacgctcaa	6840
	ttccaaagcca	acaaacctac	gattttccaa	caagcgggat	tagagaaaaa	cgctagcttt	6900
	gtaacgaata	acttaaacat	tcaaggagcg	tttaacaaca	acgccacgca	aaaaatagag	6960
	gtgcttcaaa	atttagtgat	cgcttcaaac	gcttctttaa	gcaccgggat	ttatgggtta	7020
	gaagtagggg	gggcattgaa	taatttggga	gcgatccatt	ttaatttaga	aaattctcaa	7080
45	acgcctgtaa	atccgctcat	tcaagtaggg	gggacttaca	atctcaacac	cacccaaacg	7140
	ccttttatga	atgtcagcgt	ggctaaggc	gggaacttaca	ctttattaaa	aagcagccgt	7200
	tatattgatt	acaatatcaa	ccctaacagc	ttgcaatcgt	atgtgaagct	ctatacctta	7260
	atcaatatca	acggaaaacca	catagaggaa	aaaaacggcg	tattgactta	tttgggcccc	7320
	cgggtttttat	tacaagataa	ggggtttatta	ttgagtgtag	cactacctaa	ctcaaacac	7380
50	gccttcaaaa	acaacatttt	aagcctttct	gtccttcaaca	accagattaa	aatgtcttat	7440
	ggtaataaag	tgatggactt	tacccctccc	accttacagg	attacattgt	gggcattcaa	7500
	ggacaaaagg	cactcaatca	aattgaaagt	gttgggggga	ataacgctat	caagtggctt	7560
	tcaacattga	tgatggagac	taaagaaaaa	ccgctttttg	cgccgattta	tttagaaaaa	7620
55	cactctttaa	atgaaatctt	aggcgtaaca	aaagatcttc	aaaacaccgc	aagcttgatt	7680
	tctaacccta	atttttagaaa	taacgctacc	agccttttag	aaatggcgag	ttacacccaa	7740
	caaaccagcc	gtttgacaaa	actctctgat	tttagggcta	gagagggaga	gtccaatttt	7800
	tcagagcgct	tgtagagcgt	taaaaacaag	cgttttagcg	atcctaacc	tagtgagggt	7860
	tttgcaaat	actctcaact	cagcaaacac	cccaataacc	tttggaattca	aggggtggga	7920
	ggagcgagct	ttatttcttg	gggcaatggc	acgctttatg	gcttgaatgt	gggctatgac	7980
60	cgattgggtta	aaagcgtgat	ccttgggggt	tatgtggctt	atggctatag	cggtttttaac	8040
	gggaacatca	tgcattcttt	ggctaataat	gtggatgtgg	ggatgtatgc	gagggctttt	8100
	ttgaaaagaa	acgaattcac	tttgagcgcg	aatgaaactt	atggaggcaa	tgcgagtcac	8160
	atcaattctt	ctaattcctt	gctctctgtg	ttgaaccaac	gctacaacta	caacacctgg	8220
	acaacgagcg	tgaatgggaa	ttacggctat	gatttcatgt	tcaaacaaaa	aagcgtgggtg	8280
65	ctaaaacctc	aagtgggctt	gagctatcat	ttcataggct	tgagcgggat	gaaaggtaaa	8340
	atgcaaaatc	cagcttacca	acaattcgtc	atgcattcaa	acccttctaa	cgaatcggtt	8400
	ttaacgctca	acatgggggt	agagagccgt	aaatattttg	gtaaaaattc	ctattatttt	8460

gtaacggcgga ggttgggtag ggatcttttg atcaaaagcta aaggcgacaa tgtgggtgcgt 8520  
 tttgtgggtg aaaacacttt attgtaccgc aagggggaaa tttttaacac ttttgcgagc 8580  
 gtgatcacag gaggcgaaat gcatttgggt cgtttgatgt atgtgaatgc ggggggtgggg 8640  
 cttaaaatgg gcttgcaata ccaagatctt aatatcactg ggaatgtggg catgcgagtg 8700  
 5 gcggttttag  
 <212> Type : DNA  
 <211> Length : 8709  
 SequenceName : SEQ ID 475  
 SequenceDescription :  
 10 Sequence  
 -----  
 <213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :  
 15 atggcggttta aaaaggccag attgatttcc aggtttattt caaaaggatc tttcaaattg 60  
 aataagatct caaagaaatt tttcacattg aatcaaactt taaagcggtg aaagccctta 120  
 aaacgccata aaaaaacaaa atctattgaa aagcccttta ataaaaacaa atctttttta 180  
 aaagcttcgg ttttattgat aggagcgcta ggggggttat ccacctaag ggctaacgaa 240  
 tgccgttatt ggtcatgggt gtcttggagt tatcaagaca atattgaaag cggtcctaata 300  
 20 tcaccacgcg acaactctta ttgtcttttt agtagcgctc aaggctctgg gacttattat 360  
 ttaaacactc ttaccactta tagcgctggg ggggctagtt tcacgcaaaa attcaatggg 420  
 ggcaagcttg atagctctaa gaatatccgc tttggaggca caggatttaa tggagggtgat 480  
 gtagggtata tcaactggaac ttataatgct caaacgatga attttaattc tagccatata 540  
 acaaccggaa actcatacgc tgatggcggt gggaccacgc tcaattttta cgcgactaac 600  
 25 aatatcacta tcaactcaagc gagctttgat aacagcgatg caggagacaca aaaatcttac 660  
 atgaattttt aaggctctaa tatcaagatc agtggctcta gctttacaga cgacaccaat 720  
 ggagggtttt atttcagcgg taataacaat aatagcacca tctctttcaa tcaaacacgc 780  
 ttcaatcaag ggactttata ttttagtaac agcgccactt taagcttcaa taacagcaat 840  
 30 ttcaatcaag ggactttata ctttaacagc gcccaatcca cttttgaaaa cagcaatttc 900  
 aatcaaggca cttataattt taatgacaat actagcttta ataacgacac cttcaatcaa 960  
 ggcaactata attttaatag cagcaagggt agtttttcag gcgctaacac tttaaattca 1020  
 agttcgctct ttgctagcct taaaggcagt gtgtctttta attctgggtg gatttttaac 1080  
 ctcaatcaaa cccttaataa taatcaaacc tatgacattc tcaactacaa cggagcgatc 1140  
 cagttacggg agtatcaaa ctatttgggt actataagga cgataaagcc 1200  
 35 attagccatg ttgaagttag taataacact tatgatgtaa cctttgacat taacggggcaa 1260  
 gatgaaacct tacaagaaac ctttagcaac caatctatta ttaccaat tttaggagac 1320  
 gatttacaac aacaagccca acaaacctat caagaggatg tagctaattc ccagaacgct 1380  
 ttgaataagg ttgtagcga caacacgata gcaaatcaacg atacaagcta cactcaaacg 1440  
 agtaacccca ctatccttaa agacgctcaa ggtttagaaa acaccaacca acaaatccaa 1500  
 40 caagacgaaa aagccttaga aaaagattta gcccaaatca agcaattagc caactccacc 1560  
 acaggcttta acgaacaagc tttcactcaa gctcaaaaac aagaacaaca agatgaacaa 1620  
 gccttacaga acgtagaaa cgcttttaat acggaacaag agggattaga acaagcgata 1680  
 gctaacgcta aacatgccaa cccacacca aatccgacac caagcccac acccactcct 1740  
 ataaaacaca cagcgccaaa cactccccct agtcaagtcc cgccacacac ccctagtcaa 1800  
 45 aattttaccta aaacaaatgt gtggaatggg gttttattgg ttcaaaacaa aacttactca 1860  
 aacaaaggca tttattatat tgatcccaat ctttcaggac agagcgggtc aagcgggcaac 1920  
 acgctcagca cctatacagc taatttggtt gggagaagtt ttggcgtaa tgctaacaat 1980  
 ggcaactttg tcatagggaa taatacagag agtgtgaatg ataacgggtt gatttggata 2040  
 gggcatggag gctttggcta tattacggga acttttagtg cggctaacat ttacttgacc 2100  
 50 aataattttt aaaccggtga aggcgtttca aattcagatg gtgggggagc gaacattacc 2160  
 tttaaagcaa gcgataatat cactatggat ggcttgaatt acaataacgc tgaaaccggt 2220  
 actaaaatga ttcaaacagg ggccagtcag cattoctata ccacttttga cgtaccaat 2280  
 aatatcagtg taactgattc tgatttttagc gatatgactt gggggaaatt cagtttttagc 2340  
 gctaagaata tttcgtttcc taacgcttcg ttcagcggct ttacaaaccc tggaggatca 2400  
 55 agcactatca gcacgaatgc ttctaattct ttaagcttta cagattctcg cttgaatggg 2460  
 ggagcaatct ataatttaca ggctaataagc cttattttca ataacacgca agcgggtttt 2520  
 aatgtcttgt attctagggg gacaagcaat ttaaagccca ccacacagct tttaggcaac 2580  
 acgagtttta cgcttagctc tcaaagtttg ctttaacgcta atggcgatac aaccttgcaa 2640  
 aacaacgcta atatcacgct tggcaataaa agtcaagcgc cttttaaaaa tttctttaacg 2700  
 60 cttgataaca attctaattt aagcttagac aatcaaagcg ttttgaaacg gaatggcacg 2760  
 agtgcctttt acaatcaagc gagtctcaac atttataatg ggagtcaagc ggccttttagc 2820  
 agtctctttt ttaatggcgg aacactcagt cttaacgcga atagcaagct caacgcttct 2880  
 agcgctagtt tttcaaacaa caccactatt aatttagacg atagcgtttt gaatgcgaat 2940  
 aacacaagct ctttaaacgc taatatcaat tttcaaggcg caagccaggc tgatttttga 3000  
 65 ggcaacacga ctattgatac agcaagcttt aattttgaca gcgcaagttc attgaatttt 3060  
 aataacctta cggctaatgg ggcgttaaat tttaatgggt atgcgccttc ttttaactaa 3120  
 gctttaatga atgtcagcgg gcagtttggg ttagggaata atggggatat taatttatct 3180

	gacatcaata	tcttttgacaa	catcacaaaa	tctgttaactt	acaacatctt	aaacgctcaa	3240
	aaagggatta	ctggcatttag	tgggggcta	ggctatgaaa	aaatcctttt	ttatggcatg	3300
	aaaatccaaa	acgctaccta	tagcgataat	aacaacatcc	aaacttggtc	gtttataaac	3360
	cctctcaatt	cttctcaaat	cattcaagag	agcattaaaa	atggggatct	aacctagaa	3420
5	gttttaata	accctaactc	ggcttccaac	actattttta	atatcgctcc	tgagctttat	3480
	aattaccaag	attctaagca	aaatcctacc	ggctatagct	atgattatag	cgacaatcaa	3540
	gcaggcactt	attacttgac	aagcaacatt	aaaggtcttt	tcacccctaa	aggctctcaa	3600
	acgcctcaaa	ccccaggcac	ttatagccca	tttaaccagc	ctttgaatag	tttgaatatc	3660
	tacaataagg	gtttttctag	cgagaattta	aaaacgcttt	tagggatcct	ttctcaaaat	3720
10	tccgccacct	taaaagaaat	gattgaaatc	aaccaactag	acaatatcac	taacattaat	3780
	gaagtgttgc	aactcttaga	taagattaaa	atcacccaag	cgcaaaagca	agcgctccta	3840
	gaaacgatca	accatttgac	tgacaacatc	aatcaaacct	ttataaacgg	gaatctcggt	3900
	ataggcgcta	cccaagataa	tgttacaaa	tctactagct	ctatatgggt	tgggggcaat	3960
	ggctatagca	gcccttgccg	gctagatagc	gccacttggt	cttcttttag	aaacacttac	4020
15	ttggggcaat	tattaggctc	aacttccctt	tatttaggct	acattaacgc	tgattttaaa	4080
	gctaaaagca	tttatattac	cgggacaatt	ggaagtagta	acgcttttga	aagcggaggg	4140
	agcgcggatg	tgaaaccttc	aagcgcta	aacttagtgt	tgaataaagc	taacatagaa	4200
	gctcaagcca	cagacaatat	ctttaatctt	ttgggtcaag	aagggattga	taaaatcttt	4260
	aatcagggga	atttagcgaa	tggtcttagt	caaatggcta	tggaaaaaat	caagcaagcc	4320
20	ggcgggttag	ggaactttat	agaaaaagct	ctaagccctt	tgagtaagga	attaccgcgt	4380
	agcttgcga	tcaccacctt	aggccaactt	ataggtcaaa	ataacttaga	tgattttattg	4440
	aataatagt	gagtcatgaa	tgaaatccaa	aacattatca	gtcaaaaact	aagcattttt	4500
	ggcaattttg	ttaccccatc	catcatagaa	aactaccttg	ctaagcagtc	tttaaaaagc	4560
	atgctagacg	ataaagggct	tttgaatttt	atcggtgggt	atatagacgc	ttctgaatta	4620
25	agctctattt	taggcgtgat	tttaaaggat	atcataacc	cccctacaag	cctgcaaaa	4680
	gacattgggt	tggtagcgaa	cgacttggtg	aacgagtttt	taggacaaga	tggtgtcaaa	4740
	aagctagaaa	gtcaaggcct	ggtgagtaat	atcatcaata	atgtttatttc	tcaaggcggg	4800
	ttgagcggcg	tttataatca	aggttttagg	agcgtgttgc	cgccctcttt	acaaaacgcg	4860
	ctcaaaagaaa	acgatttagg	cactctttta	tcgcttagag	gcttgcatga	tttttggcaa	4920
30	aaagggtatt	tttaactttt	aagcaatggc	tatgtttttg	tcaataacag	ctcttttagt	4980
	aacgctactg	ggggtagttt	gaattttgtc	gccacaagtc	ctattatctt	taatggcgat	5040
	aatacgattg	acttttagcaa	gtatcaaggc	gcattgattt	ttgcttctaa	tggtgtttct	5100
	aatatcaata	tcaccacctt	aaacgcct	aattggcttaa	gccttaatgc	gggtttgaa	5160
	aatgtgagcg	ttcaaaaagg	agaaatttgt	atcaatttag	ccaattgccc	tacaacccaa	5220
35	aacagctctc	ctgcaaaactc	tagcgttaacc	cccactaatg	agtcttttaag	cgtgcacgct	5280
	aataatttca	ctttcttagg	cacaatcatc	tctaattggg	ctattgattt	gtctcaagta	5340
	acaaatgaaa	cggttttagg	cacgctcaat	atggcgaata	atgcgacctt	gcaagcta	5400
	aatttaacga	tcaccaacgc	ttttaacaac	gcctctaact	ctacggctaa	tattgatggg	5460
	aatttcacct	taaaccaaca	agcgacttta	agcactaacg	ctagtgggtt	gaatgtcatg	5520
40	gggaatttta	atagctatgg	cgatttggtg	tttaacctca	gtcattcagt	tagtcatgct	5580
	attatcaata	ctcaaggcac	agcgacgac	atggccaata	ataacccttt	gatccaattc	5640
	aacgcttctt	caaaagaagt	gggtacttac	acgctgattg	atagcgctaa	agccattttat	5700
	tacgggtata	acaaccaaat	cacaggaggc	agtagcctgg	ataattacct	taagctttat	5760
	gcgctcattg	atattaatgg	caagcacatg	gtgatgactg	acaacggctt	aacctataac	5820
45	gggcaagccg	tgagcgttaa	agatggcggg	ttagttgtag	gctttaagga	ctctcaaaat	5880
	caatacatatt	acactttccat	tctttataat	aaagtgaata	tcgctgtttc	taatgatcct	5940
	atcaataacc	cacaagcccc	cacttttaaa	caatatatcg	ctcaaatcca	gggcgttcaa	6000
	agcgtggata	gcacgatca	agctggggga	aatcaagcga	tttaattggct	caataaaatc	6060
	tttgaaacta	aaggaagccc	tttattcgct	ccctattatc	tagagagcca	ctccacaaaa	6120
50	gatttaacca	cgatcgctgg	agatattgct	aacactttag	aagtcacgc	taacccta	6180
	tttaaaaatg	acgccactaa	tattttacag	atcaacacct	acacgcagca	aatgagtcgt	6240
	ttagccaagc	tctctgacac	ttcaactttc	gcccgtttctg	atttctttaga	acgcttagaa	6300
	gcccttaaaa	acaagcgatt	cgctgatgog	atccctaacg	ctatggatgt	gattttaaaa	6360
	tactctcaaa	ggaatagagt	taaaaataat	gtgtggcgca	caggagttgg	aggggctagt	6420
55	ttcattagt	gaggtactgg	aacttttat	ggtatcaatg	taggggtatga	taggtttatt	6480
	aagggcgtga	ttgtgggagg	ttatgccgct	tatgggtata	gcgggttcca	tgcaaacatc	6540
	actcaatcag	gctctagcaa	tgtcaatgtg	ggcgtttata	gccgagcgtt	tatcaaaaag	6600
	agcagctaa	ccatgagctt	gaatgagact	tggggataca	ataaaacttt	catcaactcc	6660
	tatgaccccc	tactctcaat	catcaatcag	tcttacagat	acgacacttg	gacgactgac	6720
60	gctaaaaatca	attatggcta	tgattttcatg	tttaagata	aaagcgttat	ttttaaaccc	6780
	caagtaggct	taagctatta	ttacattggg	ttgtctggtt	taaggggcat	ttggatgat	6840
	cctattttaca	accaattcag	agccaatgct	tgccctaata	aaaaatccgt	tctaacgatc	6900
	aattttgccc	tagaaagtcg	gcattatttc	aataaaaact	cttattattt	tgtgattgog	6960
	gatgtgggca	gagacttatt	catttaattct	atgggggata	aaatgggtgcg	tttcatcggt	7020
65	ataaacaccc	taagctatag	agatgggtgc	agatacaaca	cttttgctag	cattatcaca	7080
	ggcggggaga	taagattgtt	caaaaccttt	tatgtgaatg	cgggcatagg	ggctagggtt	7140
	gggcttgatt	ataaagatat	taattattac	ggaaatattg	gtatgcgcta	tgcttttttaa	7200

<212> Type : DNA  
 <211> Length : 7200  
 SequenceName : SEQ ID 476  
 SequenceDescription :

5

Sequence

-----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

10	atggaataac	aacaaacaca	ccgcaaaatc	aatcgccctt	tagtttctct	cgtttttagca	60
	ggagcggtta	ttagcgccat	accgcaagag	agtcattgct	cctttttcac	gaccgtgac	120
	attccagcca	ttgttggggg	tatcgccaca	ggcactgctg	taggaacggg	ctcagggctt	180
	cttagttggg	gactcaaaac	agccgaagaa	gcgaataaaa	ccccagataa	acccgataaa	240
15	gttttggcga	ttaacgacag	aaaaggcttt	aatgaatttc	ctaacaaggga	atacgactta	300
	tacaaatccc	ttttatccag	taagattgat	ggaggttggg	actgggggaa	cgccgctagg	360
	cattattggg	tcaaaggcgg	gcaatggaac	aagcttgaag	tggatatgaa	agacgctgta	420
	gggacttata	aactatcagg	gcttagaaac	tttactgggt	gggatttaga	cgtgaatatg	480
	caaaaagcca	ctttgcgttt	gggccaattc	aatggcaatt	ctttcacaa	ctataaggat	540
20	agcgctgatc	gcaccacgag	agtgaatttc	aacgctaaaa	atatttcaat	tgataatttt	600
	gtcattaacc	cacctcggtg	gggttctgga	agcgaggaga	aagccagctc	tacggttttg	660
	actttgcaag	cttcagaagg	gatcactagc	agtaaaaaat	cggaaatttc	tctttatgat	720
	ggcgccacgc	tcaatttggc	ttcaaacacg	gttaaatata	atggtaattg	gtggatgggc	780
	cgtttgcaat	acgtgggagc	gtatttagcc	ccttcataca	gcacgatcaa	cacttcaaaa	840
25	gttcaagggg	aaatgggatt	taacctctc	actgtggggg	atcaaacacg	cgctcaagcg	900
	ggcattatcg	ctagcaataa	gactcatatt	ggcacactgg	atttgtggca	aagcgccggg	960
	ttaaataatca	ttgcccctcc	agaagggtgc	tacaaggata	aacctaatag	taccacttct	1020
	caaagtggca	ctaaaaacga	caagaaagag	atcagtcaaa	ataacaatag	caacacagag	1080
	gtcattaacc	cacctcaata	cacgcaaaaa	acagaaactg	aacccacgca	agtcattgat	1140
30	gggccttttg	ctggcggcaa	agacacgggt	gtcaatatat	tccacttaaa	cactaaagcc	1200
	gatggcacga	ttaaagtggg	aggggtttaa	gcttctctta	ccacgaatgc	ggctcatttg	1260
	aatatcgcca	aaggcggtgt	caatctgtcc	aatcaagcga	gcgggcgcac	ccttttagtg	1320
	gaaaatctaa	ccgggaatat	caccgttgat	gggcctttta	gagtgaaata	tcaagtgggt	1380
	ggctatgctt	tggcaggatc	aagcgcgaa	tttgagttta	aggctgggtg	ggatactaaa	1440
35	aacggcacag	ccactttcaa	taacgatatt	agtttgggaa	gatttgtgaa	tttaaagggtg	1500
	gatgctcata	cagctaattt	taaagggtat	gatacgggta	atgggtgggt	caacacctta	1560
	gatttttagtg	gtgtttacaga	caaagtcaat	acaaacaagc	tcatacacag	ttccactaat	1620
	gtggccggtta	aaaacttcaa	cattaatgaa	ttgattgtta	aaaccaatgg	gataagtgtg	1680
	ggggaataca	ctcatttttag	cgaagatata	ggcagtcaat	cgcgtatcaa	taccgtgcgt	1740
40	ttggaaactg	gcactaggtc	aatcttttct	gggggtgtca	aattttaaag	cggtgaaaaa	1800
	ctagttatca	atgattttta	ctatagccct	tggaaattat	ttgacgctag	gaatgttaaa	1860
	aatgttgaaa	tcaccagaaa	attcgcttct	tcaaccccag	aaaacccttg	gggcacatca	1920
	aagctcatgt	ttaataatct	aaccttgggt	caaaatgcgg	tcattggacta	tagtcaattt	1980
	tcaaattttaa	ccatttcagg	ggattttatc	aacaatcaag	gcactatcaa	ctatctggct	2040
45	cgaggcggga	aagtggcaac	cttaaatgta	ggcaatgcag	cagctatgat	gtttaataat	2100
	gatatagaca	gcgcgaccgg	attttcaaaa	ccgctcatca	agattaacag	cgctcaagat	2160
	ctcattaaaa	atcacagagca	tgttttattg	aaagcgaaaa	tcattgggtta	tggtaatgtt	2220
	tctacaggta	ccaatggcat	tagtaattgt	aatctagaag	agcaattcaa	agagcgctta	2280
	gccctttata	acaataataa	ccgcatggat	acttgtgtgg	tgcgaaatac	tgatgacatt	2340
50	aaagcatgcg	gtatggctat	cggcaatcaa	agcatgggtg	acaaccctga	caattacaag	2400
	tatcttatcg	gtaaggcatg	gagaaatata	ggcatcagta	aaacggctaa	cggctctaaa	2460
	atttcggtgt	attattttag	caatttctac	cctactgaga	atgggtggca	taccaccaac	2520
	ttaccacaaa	acaccactaa	taatgcgcat	tctgctaact	acgctctcgt	gaagaacgct	2580
	cctttcgctc	acagcgccac	tcctaattta	gtcgctatca	atcagcatga	ttttggcact	2640
55	attgagagcg	tgtttgaaat	ggctaaccgc	tctaaagata	ttgacacgct	ctataactcat	2700
	tcaggcgcg	aaggcaggga	tctcttgcaa	actttattga	ttgatagcca	tgatgcggtg	2760
	tatgccagac	aaatgattga	taacacaagc	accggtgaaa	tcaccaagca	attgaatgcg	2820
	gccactgacg	ctttaacaaa	cgtagccagt	ttagagcata	aacaaagcgg	cttacaacac	2880
	ttgagcttga	gtaatgcgat	gatttttaaa	tctcgtttag	tcaatctctc	taggaagcac	2940
60	accaaccata	ttaactcggt	cgctcaacgc	ttacaagctt	taaaaggcca	agaattcgct	3000
	tcttttagaga	gcgcggcgca	agtgttgtat	caatttgccc	ctaaatatga	aaaacctacc	3060
	aatgtttggg	ctaacgctat	tgggggagcg	acttgtgaata	gcggctctaa	cgcttcattg	3120
	tatggcacia	gcgcggcgct	agacgcttcc	cttaacggga	atgtggaagc	cattgtgggc	3180
	ggttttggaa	gctatgggtta	tagctccttt	agcaatcaag	cgaactctct	taactctggg	3240
65	gccataaacg	ctaatttttg	cgtgtatagc	cgtttttttg	ccaaccagca	tgaatttgac	3300
	tttgaaagctc	aaggggcgct	caatcaagct	tgaatttcaa	aagcactcta		3360
	ttacaagatt	tgaatcaaag	ctataattac	ttagcctata	gcgccacagc	aagagcgagt	3420

```

tatgggttatg acttcgcgtt ttttaggaac gcttttagtgt taaaaccaag cgtggggcgtg 3480
agctataaacc atttaggttc aaccaacttt aaaagcaata gccaatcaca agtgggttta 3540
aaaaatggcg cgagcagtc gcatattatc aacgctaacg ctaacgtgga agcgcggttat 3600
tattatgggg acacttcata cttttatttg catgcgggag ttttacaaga gttcgctcac 3660
5 tttggatcga atgatgtggc gtcttttaaac acctttaaaa tcaatgccgc tcgcagtcct 3720
ttaagcacct atgcaagagc gatgatgggt ggggaattgc aattggctaa agaagtgttt 3780
ttgaatttgg gcgtgggttta tttgcacaat ttgattttcca acgcaagcca tttcgcttcc 3840
aatttaggaa tgaggtagt tttctaa 3867
<212> Type : DNA
10 <211> Length : 3867
    SequenceName : SEQ ID 477
    SequenceDescription :

Sequence
15 -----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
atgaaaaaac acatcctttc attaaacttta ggatcgcttt tagtttccac tttgagcgct 60
gaagacgacg gctttttacac aagcgtaggc tatcagatcg gtgaagccgc tcaaatggta 120
20 acaaacacca aaggcatcca agatctttca gatcggttatg aaagtgtgaa caaccttttg 180
aatagataca gcaccctaaa cacccttatc aaattgtccg ctgaccggag cgcgattaat 240
gcggtgcggg aaaatctggg cgcgagcggc aagaatttga tcggcgataa agccaattcc 300
ccggcgctatc aagccgtgct tttagcgatc aacgcggcgg taggggtttg gaatgtcgt 360
ggctacgtga cgcaatgcgg gggtaacgcc aatgggtcaaa aaagcatctc ttcaaagacc 420
25 atcttcaaca acgagccagg gtatcgatcc acttccatca cttgtttctt gaacgggcat 480
tctcctggat actacggccc tatgagcatt gaaaatttca aaaagcttaa cgaagcctac 540
cagatcctcc aaacggcttt aaaacgaggc ttgcccgcgc tcaaagaaa caacgggaaa 600
gtcaatgtaa cctatactta cacatgctca ggggacggga ataataactg ctcgctcaca 660
gtcacagggtg taaataatca aaaagacgga accaagacta aaatccaaac catagacggc 720
30 aaaagcgtaa ccaccacgat cagttcaaaa gtggttgata gtcgtgcaga tggtaataca 780
acaggggtgt cctacaccga aatcaccaac aaattagaag gtgtgcctga tagcgctcaa 840
gcgctcttag cgcaagcgag tacgctcatt aacaccatca acaacgcag cccgtatttc 900
catgctagta atagttagtga ggctaacgcc ccaaattct ctactactac tgggaaaata 960
tgcgctgctt tttcagaaga aatcagcgcg atccaaaaga tgatcacgga cgcgcaagag 1020
35 ctggtcaatc aaacgagcgt cattaacgag catgaacaaa caactccggt aggcaataac 1080
aatggcaagc ctttcaaccc tttcacggac gctagttttg cgcaaggcat gctcgctaac 1140
gctagtgcac aagccaagat gctcaatcta gccgaacaag tggggcaagc cattaaccct 1200
gagagcgctta tggcgacttt tcaaaatttt gttaaaggct ttttagccac atgcaacaac 1260
ccatcaaccg ctgggtactgg tggcacgcaa ggttcagctc caggcacagt taccactcaa 1320
40 actttcgctt ccggttgccg ctatgttaga caaacgataa caaatcttaa aaacagcatc 1380
gccatttttg gcaactcaaga gcagcagata gagcaagccg aaaacatcgc tgacactctg 1440
gtgaatttca aatctagata cagcgaattg gccaacactt ataacagcat caccactgcg 1500
ctctctaata tccctaacgc gcaaagcttg caaaatgcgg tgagtaaaaa gaataacccc 1560
tatagcccg aaggcataga caccaattac taactcaatc aaaactctta caaccaaatac 1620
45 caaacatca accaagaact cgggcgtaac cccttttaga aagtggggat tgttagttct 1680
caaaccaata atggcgcgat gaatgggatc ggtattcagg tgggttacaa acaattcttt 1740
ggccaaaaaa gaaaatgggg cgctaggtat tacggctttt ttgattacaa ccatgcgttc 1800
attaaatcca gcttcttcaa ctccgcttct gacgtgtgga cttatggctt tggagcggac 1860
gctctttata atttcatcaa cgataaagcc accaatttct taggcaaaaa caacaagctt 1920
50 tctgtggggc tttttggggg tattgcatta gccgggactt catggcttaa ttctgagtat 1980
gtgaatttag ccaccatgaa taacgtctat aacgctaaaa tgaacgtggc gaatttccaa 2040
ttcttattca acatgggagt gaggatgaat ttagccaggc ctaagaaaaa agacagcgat 2100
catgcggctc agcatgggat tgagttaggg cttaaaatcc ccaccatcaa cacgaactac 2160
tactccttta tgggggctga actcaaatat cgaaggctct atagcgtgta tttgaattac 2220
55 gtgttcgctt attaa 2235
<212> Type : DNA
<211> Length : 2235
    SequenceName : SEQ ID 478
    SequenceDescription :

Sequence
-----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
65 atgataaaaa aagctaaaaa attcatacca ttctttttta ttggctccct cttagctgaa 60
gacaaatggc ggtatatgtc tgtaggctat caaatcgggt gcacgcagca attcatcaat 120
aacaacaac ttttagaaaa tcaaaatc atcaatagca tcaactaaag cgcgatcaac 180

```

	attgcagggc	ctactaccgg	ccttatcact	ttaagctctc	aaaccgtcat	tgacgcttta	240
	ggctatggcg	tgagtaacac	tgttggcaac	caatttagagg	gcattttctaa	catcttgaat	300
	caaattggca	aaagaaaaga	ctttttattct	agccgtcaaa	tctctagcat	ttcccagcaa	360
	atcatagggc	ttaaaggaag	ctctgatccc	ttaaagccc	attcttcaca	aatcacagcc	420
5	aaactccttt	ccaacaccca	aaagcgcgtt	gatcagggca	tcgctctaag	ctctaataac	480
	attagtgcag	tcaatagcct	aaaccctagc	aacaactccc	aagaagtcaa	agcccagctc	540
	caaaacaccg	cgcaatccat	ggcggaatta	ttgcaacaaa	tgaaacacag	catcactaaa	600
	accactagca	ccacttacgc	acaatcctta	ctctccaatc	tgaccgatgc	ggtgaatgca	660
	tctagcaata	atcactctta	tgtgagcgct	ctgtttaacg	ctttaaacac	tttaggggtg	720
10	gggggttttcc	ccaccacaac	ctcaacgcat	gtgggtgctaa	acccaccggg	acaagtcgta	780
	ttctatccaa	ctaattccct	tttaggctct	actcttcaa	acagcaataa	ccaacaacaa	840
	tacaacaaca	cccttttaac	gaacacctta	caaggggaat	taagcactaa	caatcaaaat	900
	aaccccaatt	gttgcgcgca	tcaaatccag	tgttttagagc	aattcatcca	aaatttaacc	960
	cccttagcgc	caacccccac	ttcaactaac	caggccaacc	agcaagtcca	agccatcgct	1020
15	caaaaacttc	aaagcgttgc	tatcaacgct	ttagacaaca	atgcgatcaa	caacaccacc	1080
	tataatttaa	acaacttgca	caacgctttg	aatttccaag	cctatcaaa	cacgatagaa	1140
	caatacaata	acgtctttaa	gcaaatctcg	tggattagtt	ttagcgagcc	taaaaacttg	1200
	ctcaaaaaca	cttccaataa	ctaccaaatc	ggcaggtta	ccaacgatca	agggcaaaat	1260
	atcagcgct	atgattgcac	aagcgctacc	ggaagccttt	ctagcgatgc	ttctagtggg	1320
20	atctcatgct	cagccacaag	ctccacaaat	aacacaaata	gttttgacaa	ttcttttagtc	1380
	gctaacctcca	tttatacaaac	catcaacggc	aaagagcaga	tcggcgtaga	ttcttttaac	1440
	cttgtctctc	aagtgtggag	cggtttataac	tctttaaaaa	cttcagaaga	aaatttgcaa	1500
	aaaaacgcca	aaatatattg	caacaatgga	tcgcaatctg	ggacaagccc	atgcaatagc	1560
	tcttcagggg	gtttgagcat	cagcgggaac	gcccaattgc	aaaatatttt	aagccctact	1620
25	aatggcgacta	ccactaatat	tcaagcttaa	agcaacgctt	ccaaactaaa	agcgatggta	1680
	atggtgaata	atgaagaaga	agccaaaacg	accaatttca	atcaaagcag	tgggccaacc	1740
	acacaatctt	ctaacagcac	ggtgatggga	gctttaaaca	ccgtattgca	aaatgtcagc	1800
	aattttccaa	aaagcattca	aagcgctttt	caaaaccaag	aaaataatat	ccaagcttgg	1860
	gcgaacgcac	tttataaacac	tagtaaccct	aatgggaatc	aatcgcaaaa	tttaaccact	1920
30	aacaataacc	aagatttacg	catccaatta	agggcgaatt	tttaccagct	catcaatacc	1980
	attaaccagc	aagtgcctac	agacatgaac	gctttaaatta	atcaaagcca	acaaacccag	2040
	caaacaagcg	gatcagcaag	caccacgaac	aacgcgatgc	cgagcggaa	ggggagtagt	2100
	ggcaactggg	ctaccagca	gtgggtccgat	tctaaggctt	attacagcgg	gttgcaaaagc	2160
35	gcttttaggg	atcaaacaca	agcgacaact	caaaatggga	gcagtgggtg	gagcaataac	2220
	acctaacaat	tccaacaaat	cacgctcact	agcgggtggt	tgctcaatca	aattatcaca	2280
	aaccttaaga	gcgttaatgg	gggcagtaac	gggggaagca	gtgggaatgg	cactagtcaa	2340
	atcaacacac	ccaactaat	gctcacagac	gttagcgatg	ggaaattagg	gacttataat	2400
	agtagcaata	gtagcaatag	tagcaatagt	ggcaataata	acggctatac	gccatgcaat	2460
	agcaccaacg	ggagcaatgg	gacgagtggg	agcaattggt	atgaacccaa	caaacaacaa	2520
40	aacgccacca	ccgcaaccac	cacgaccgac	agcaatttac	aaaaagtcta	taatgacgcc	2580
	caaaaaaatg	ccaattattat	cgccagctct	gggaacaata	aaggcgttga	aaacggctta	2640
	aaacaattct	ttgaagcggt	aaaaagtaat	agcagcagtc	ttagtaattt	atgtggtaac	2700
	ggtagttagcg	gtagtagctc	tacttgctcc	ggtgggctta	tcaacctttt	aggggcaatc	2760
	cccacaaacg	gagttagcga	tacgaataat	ttaattaatc	tgctcactga	attcattaaa	2820
45	accgcgggtg	ttatccaaaa	taaggatagt	aatgtatcta	ctagtcttac	aagcgctttt	2880
	caagccatta	cgagcgctat	ttctcaaggg	tttcaagcct	tgcaaaaacga	tattagccct	2940
	aatgcgattt	tgaccttgct	ccaagaaatc	acttctaaca	ccaccaccat	tcagtcatte	3000
	tcgcaaacct	tacggcagct	tttaggggat	aaaaccttct	ttatggtgca	acaaaagctc	3060
	attgatgcga	tgattaaacg	cagaaatcag	gttcaaaaacg	cgcaaaatca	agccaataac	3120
50	tacggctctc	aacccggttt	aagccagtat	gcggcgctta	aaagcaccga	acacggcatg	3180
	agcaatggct	taggggttgg	cataggctat	aaatacttct	ttggtaaggc	taggaaatta	3240
	ggccttaggc	attatttttt	ctttgattac	ggcttttagt	aaataggcct	agccaatcaa	3300
	agcgtgaaag	cgaatatctt	tgcttatggg	gtaggcacgg	attttttatg	gaatctatct	3360
	aggaggactt	acaacactaa	agcgttgaat	tttgggctat	ttgccggggg	ccaactgggc	3420
55	ggtgcaactt	ggcttagttc	cttaaggcaa	caaatcattg	acaactgggg	gaacgctaata	3480
	gacatccatt	caacgaattt	tcaagtggcg	ctgaattttg	gggtgcgcac	caatttcgcg	3540
	gagtttaagc	gtttttgctaa	gaaattccac	aatcaagggg	tcatacagcca	aaagagcgtg	3600
	gaattttggga	tcaaggtgcc	tctcatcaat	caagcgattt	tgaatagtgc	tggggctgat	3660
60	gtgagctaca	ggaggcttta	tactttctat	atcaattaca	tcattgggggtt	ttaa	3714

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3714

SequenceName : SEQ ID 479

SequenceDescription :

Sequence

-----



```

<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
5  atgaaacaaa atttaaagcc attcaaaatg attaaggaaa atttaatgac acaatctcaa      60
   aaagtaagat tcttagcccc tttgagccta gcgttaagct tgagcttcaa tccagtgggc      120
   gctgaagaag atggggggctt tatgaccttt gggatatgaat taggtcaggt ggtccagcaa      180
   gtgaaaaacc cgggtaaaaat caaagccgaa gaattagcgg gcctgttaaa ctctaccacg      240
   acaacaacaa ccaatatcaa tattgcaggc acaggaggga atgtcgccgg gactttgggc      300
   aaccttttta tgaaccaatt gggcaatttg attgatttgt atcctacttt gaaaactaat      360
   aatcttcacc aatgcggtag cactaatagc ggtaatggcg ctactgctgc cgctgctact      420
10  aacaatagcc ctgttttcca aggtaacctg gctctttata acgaaatggg tgactctatc      480
   aaaactttga gtcaaacat cagcaagaac atctttcaag gcgacaacaa caccacgagc      540
   gctaattctot ccaaccagct cagtgaagtg aacaccgcta gcgtttatct gacttacatg      600
   aactcgttct taaacgcca caaccaagcg ggtgggattt ttcaaaacaa caccaatcaa      660
   gcttacgaga atgggtgttac cgctcaacaa atcgcttatg tctaaagca agcttgaatc      720
15  actatggggc caagcgggtga tagtggggct gcgggagcgt ttttagacgc cgcttttagc      780
   caacatgttt tcaactcggc taacgctggg aacgatttga gcgctaagga attcactagc      840
   ttggtgcaaa acatcgtcaa taattctcaa aacgctttaa cgctagccaa caacgctaac      900
   atcagcaatt caacagccta tcaagtgcgc tatgggtggga atattgatca agcgcgctct      960
   acccaactgt taacaacac cacaacact ttggctaaag ttaccgctct aaacaacgag      1020
20  cttaaagcta acccatggct tgggaatttc gctgctggta acagctctca agtgaatgcg      1080
   tttaacgggt ttaactactaa aatcggttat aagcaattct tcggggaaaa caagaatgtg      1140
   ggcttacgct actacgggtt cttcagctat aacgcgcggg gcgtgggtaa tggcccatc      1200
   tacaatcaag tcaatctgct cacttatggg gtggggactg atgtgcttta caatgtgttt      1260
   agccgctctt ttggcagtag gagtcttaat gcgggcttct ttggggggat ccaactcgca      1320
25  ggggacactt acatcagcac gctaagaaac agccctcagc ttgcgagcag acctacagcg      1380
   acaaaattcc aattcttgtt tgatgtgggc attcgcatga actttggtat cttgaaaaaa      1440
   gacctaaaaa gccataacca gcattctata gaaatcgggt tgcaaatccc tacgatttac      1500
   aacacttact ataaagctgg tggcgctgaa gtgaaatact tccgccctta tagcgtgtat      1560
   tgggtctatg gctacgcctt ctaa                                     1584
30  <212> Type : DNA
   <211> Length : 1584
       SequenceName : SEQ ID 480
       SequenceDescription :

35  Sequence
   -----
   <213> OrganismName : Helicobacter pylori, strain J99
   <400> PreSequenceString :
40  atgaaaaaaaa cctttttact ctctctctct ctctcgtttg ggctccacgc tgaagacgac      60
   ggctttttacg caagcgcggg aattcggatc ggtgaagccg ctcaaatggg gaaaaacacc      120
   aaaggcattc aacagctttc agagaattat gaaagttga acaatctttt aaataattac      180
   aacaccctaa acactcttgt aaagctgtcc tccgatccga gtgctgtcaa cgacgcaagg      240
   gataatctag gctcaagcac taggaatttg ctatagtgca aagccaattc ccccgctat      300
   caagcgggtgc ttttagcatt gaacgctgca gtgggcttgt ggcaagttac aagctatgcc      360
45  tttaccgctt gtggctcctg tagcaatgag aacgcgaatg gaggtatcca aacctttaat      420
   aatgtgccag gacaaaacac gacgaccatc acttgtaatt cgtattatga gccaggacat      480
   ggcgggccaa tatccactaa aaattatgcg atcatcaaca aggcttatca aatcattcaa      540
   aaggctttga cagccaatgg agaagggatc ccagttttta gcaacaccac tacaaaactt      600
   gatttcacta tcaatggaga caaaagaacg ggtggcgaac caaataaaaa attagtatac      660
50  ccatggagtc atgggaaaag tatttcaacc tcgtgggaatg caaccataac agcaccaaca      720
   acagaaaata tcaatacaac caatagcgct caagagcttt taaaacaagc gagcatcatt      780
   atcactaccc tgaatagtgc atgcccacaa ttccaaaatg gtggtagcgg ttattgggca      840
   gggataagtg gcaatgggac aatgtgtggg atgtttaaga atgaaatcag cgctatccaa      900
   ggcattgatcg ctaacgcgca agaagctgtc gcgcaagcca aaatcgttag tgaaaacacg      960
55  caaaatcaaa acagcctaga cgctggaaaa ccattcaacc octacacaga cgctagtttt      1020
   gctgaaagca tgctcaaaaa cgcgcaagcc caagcggaga ttttaaacca agcgaacaa      1080
   ttgggtgaaaa actttgaaaa aatccctaca gccctttgtaa atgactcttt aggggtgtgt      1140
   tatgaagtgc aaggaggtga gcgtcgtggc accaatccgg gtcagacgac ttctaact      1200
   tggggggcag gctgtgctga tgtaggacaa acgataacaa atcttaaaaa cagcatcgcc      1260
60  cattttggca ctcaagagca gcagatacag caagccgaaa acatcgctga cactctgggtg      1320
   aatttcaaat ctatagacag cgaattgggc aacacttata acagcatcac cactgcgctc      1380
   tctaatatcc ctacgcgca aagcttgcaa aatgcggtga gtaaaaagaa taaccctat      1440
   agcccgcgaag gcatagacac caattactac ctcaatcaaa actcttacia ccaaatccaa      1500
   accatcaacc aagaactcgg gcgtaacccc tttaggaaag tggggattgt tagttctcaa      1560
65  accaataatg gcgcgatgaa tgggatcggt attcagggtg gttacaaaca attctttggc      1620
   caaaaaagaa aatggggcgc taggtattac ggcttttttg attacaacca tgcgttcatt      1680
   aaatccagct tcttcaactc ggcttctgac gtgtggactt atggcttttg agcggacgct      1740

```

```

      ctttataaatt tcatcaacga taaagccacc aatttcttag gcaaaaaacaa caagctttct 1800
      gtgggggcttt ttgggggttat tgcattagcc gggacttcat ggcttaattc tgagtatgtg 1860
      aatttagcca ccatgaataa cgtctataac gctaaatga acgtggcgaa tttccaattc 1920
      ttattcaaca tgggagttag gatgaattta gccaggccta agaaaaaaga cagcgatcat 1980
5      gcggctcagc atgggattga gttagggtt aaaaatccca ccatcaacac gaactactac 2040
      tcctttatgg gggctgaact caaataccga aggtcttata gcgtgtattt gaattacgtg 2100
      ttcgcttact aa 2112
      <212> Type : DNA
      <211> Length : 2112
10      SequenceName : SEQ ID 481
      SequenceDescription :

      Sequence
      -----
15      <213> OrganismName : Helicobacter pylori, strain J99
      <400> PreSequenceString :
      atgataaaga agaatagaac gctgttttctt agtctagccc tttgcgctag cataagttat 60
      gccgaagatg atggagggtt tttcacccgc gggttatcagc ttgggcagggt catgcaagat 120
      gtccaaaacc caggcgcgcg taaaagcgac gaactcgcca gagagcttaa cgctgatgta 180
20      acgaacaaca ttttaaacaa caacaccgga ggcaatgtcg cagggggcggt gagtaacgct 240
      ttctcccaat acctttattc gcttttaggg gcgttatccca cgaaactcaa tggtaacgac 300
      gtgtctgcga acgctctttt aagtgggtgcg gtaggcagtg ggacttgccg ggctgcaggg 360
      acggctggtg gcacaactct taacactcaa agcgtctgca ccgctgcggg ctattactgg 420
      ctccctagct tgactgatag gattttaagc acgatcggca gccagactaa ctacggcacg 480
25      aacaccaat tccccaacat gcaacaacag ctacactact tgaatgcggg gaatgtgttt 540
      tttaatgcga tgaataaggc tttagagaag aatgggactg ctactgctaa tagcactagt 600
      agcactagcg gtgcgactgg ttcagatggt caaacttact ctcaacaagc tattcaatac 660
      cttcaaggcc aacaaaaata cttaaataac gcagcgaact tgctcaagca agatgaattg 720
      ctctcgaagt ctttcaactc tgccgtagct gctaacattg ggaataagga attcaattca 780
30      gccgctttta cagggttggg gcaaggcatt attgatcaat ctcaattggg ttataacgag 840
      ctactaaaaa acaccattag cgggagcgcg gttaataacg ctgggataaa ctccaacca 900
      gctaaccgtg tgcaaggggc tgctagttag ctccctaacg ctctttataa cgtgcaagta 960
      actttggata aaatcaacgc gctcaacaat caggtgagaa gcattgcctta ctgccccaa 1020
      ttcagagccg ggaacagccg tgcaacgaat attttaaacg ggttttacac taaagtgggc 1080
35      tataagcaat tcttcgggaa gaaaaggaat atcggtttgc gctattatgg tttcttttct 1140
      tataacggag cgagcgtggg ctttagatcc actcaaaata atgtagggtt atacacttat 1200
      ggggtgggga ctgatgtgtt gtataacatc tttagccgct ccatcaaaa cgcctctgtg 1260
      gatatgggct tttttagcgg tatccaatta gccggtgaga ccttccaatc cacgctcaga 1320
      gatgaccca atgtgaaatt gcattgggaa atcaataaca cgacttcca gtctctctt 1380
40      gacttcggta tgagaatgaa cttcggtaag ttggacggga aatccaaccg ccacaaccag 1440
      cacacggtgg aatttggcgt agtagtgcct acacttatta caaatcagca 1500
      gggactacog tgaagtattt ccgtccttat agcgtttatt ggtcttatgg gtattcatct 1560
      taa 1563
      <212> Type : DNA
      <211> Length : 1563
45      SequenceName : SEQ ID 482
      SequenceDescription :

      Sequence
      -----
50      <213> OrganismName : Helicobacter pylori, strain J99
      <400> PreSequenceString :
      atgaagaaaa aatttctgtc attaacctta gggttcgctt tagtttccgc ttaagcgct 60
      gaagacaacg gcttttttgt gagcgccggc tatcaaatcg gtgaatccgc tcaaattggtg 120
55      aaaaacacca aaggcattca agatctttca gacagctatg aaagattgaa caacctttta 180
      acgaattata gcgtcctaaa cgtctctatc aggcagtccg ccgaccccaa cgccatcaat 240
      aacgcaaggg gcaatttgaa cgcgagcgcg aagaatttga tcaatgataa aaagaattcc 300
      ccggcgctatc aagccgtgct tttagccttg aatgcggcag cgggggttgtg gcaagtcatg 360
      agctatgcga tcagcccttg tggccccggt aaagacacaa gcaaaaatgg gggcggttcaa 420
60      actttccaca acagccttc aaatcaatgg ggaggcacta ccattacttg tggcactact 480
      ggttatgaac caggaccata cagcatttta tccactgaaa attacgcgaa aatcaataaa 540
      gcttatcaaa tcatccaaaa ggcttttggg agcagcgga aagatatcc tgccttaagc 600
      gacaccaaca cagaactcaa attcacaatc aataaaaaata atggaaacac gaatacgaat 660
      aataatggag aagaaattgt tacaaaaaat aacgctcaag ttctttttaga acaggctagc 720
65      accattataa ctacccttaa tagcgcattg ccatggatca acaatgggtg tgcaggtggt 780
      gcgagtagtg gtagtttatg ggaagggaata tatttgaaag gcgatgggag cgcttgcggg 840
      atttttaaaa atgaaatcag cgcgattcaa gacatgatca aaaacgctgc aatagccgta 900

```

```

gagcaatcca agatcgttgc tgcaaacgcg caaaaccagc gcaacctaga caccgggaag 960
acattcaacc cctataaaga cgccaacttc gcccacagca tgttcgctaa cgccaaagcg 1020
caagcggaga ttttaaacgg cgccaagca gtggtgaaag actttgaaag aatccctgca 1080
gagttcgtaa aagactcttt aggggtgtgc catgaagtgc aaaacggcca tctccgtggc 1140
5 acgccaatccg gcacggtaac tgataacact tggggagccg gttgcgcgta tgtgggagag 1200
accgtaacga atctaaaaga cagcatcgct ctttttggcg accaagccga gcgaatccat 1260
aacgcgcgca acctcgctta cacttttagcg aacttcagca gtcagtatca aaaactaggc 1320
gaacactatg acagcatcac agcggccatt tcaagcttgc ctgatgcgca atctttacaa 1380
aatgtgggtg gcaaaaagac taacctaat agcccacaag gcatacagga taactactat 1440
10 attgactcca atatccattc tcaagtgcac tctaggagtc aagaactcgg cagtaacctt 1500
ttcagggcgtg ctggcttaat cgccgcttct accaccaata acggcgcgat gaacgggata 1560
ggctttcaag tgggctataa gcaattcttt gggaaaaaca aacgatgggg cgcaaggat 1620
tacggctttg tggattacaa ccacacctat aacaaatccc aatttttcaa cgcctcttct 1680
gatgtctgga cctatggcgt ggggagcgat ttgttagtga atttcatcaa cgataaagcc 1740
15 actaaacaca ataagatttc ttttggcgcg tttggcggtg tcgccttagc cgggacttca 1800
tggtttaatt ctcatgtatg gaattttagcg aacgtgaata attattataa ggccaaaatc 1860
aacacggcga atttcaatt ctatttcaat ctgggtttga gaatgaacct cgctaggaaa 1920
aagcatagag cgaccgataa cgcgccccaa catggcattg aactaggcac aaagatcccc 1980
acgatcaaca cgaattacta ttctttgcta ggcactacct tgcaatacag aaggctttat 2040
20 agcgtgtatc tcaactatgt gttcgtttac taa 2073
<212> Type : DNA
<211> Length : 2073
SequenceName : SEQ ID 483
SequenceDescription :

25 Sequence
-----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
30 atgaaaatca aaaaatccct ctttgccttc tctttctctc tcatggcttc attatcaagg 60
gctgaagatg acggatttta catgagtgtg ggctatcaaa tcggtgaagc ggtccaaaaa 120
gtgaaaaaca ctggagcatt acaaaatctt gcagacagat acgataactt gagcaacctt 180
ttaaaccaat acaattactt aaattcctta gtcaatctag ccagcacgcc tagcgcgatt 240
accggtgcga ttgacaatct aagctcaagc gcgatcaatc tctactagcg taccaccact 300
35 tctccggcct atcaagctgt ggcttttagc ctcaatgcgg ctgtgggcat gtggcaagtc 360
atagcctttg gcatcagctg tggccctggc ccaatcttg gccagaaca tttagaaaa 420
gggggcgctt gatcgtttga caacacgcca aactacagct acaacaccgg tagcggaaacg 480
accaccacca cttgtaatgg agccagtaat gtagggccca atgggtatct atctagcagc 540
gaataaccagg ttctcaatac cgcttatcaa actatccaaa ccgcttttaa ccaaaaccaa 600
40 ggaggcgggg tgccctgcct gaatagctcc aaaaatatgg tagtcaatat caatcaaaact 660
ttcaacaaaa accctaccac agaataccta taccgcgat ggaatggcaa ttattattca 720
ggcggttcat caatcccaat ccagctaaag attagttagc tcaatgacgc tgaaaacctt 780
ttgcaacaag ccgctactat catcaatgtc cttaccaccc aaaacccgca tgtgaatgg 840
ggcggtgggg catgggggtt tggcggttaag accgggaatg tgatggatat ttttggcgat 900
45 agttttaacg ctattaaacg aatgatcaaa aacgctcaag ccgtttttaga aaaaacccaa 960
cagcttaacg ctaatgaaaa caccaaaatc acgcaaccag acaatttcaa cccctacact 1020
tctaaagaca cgagttcgc tcaagaaatg ctcaatagag ctaacgctca agcagagatt 1080
ttgagcttag cccaacaagt agcggacaat ttccacagca ttcaagggcc tatccaacaa 1140
gatctagaag aatgcaccgc aggatcagct ggtgtgatta acgacaacac ttatggttca 1200
50 ggttgccgct ttgtgaaaga gactctcaat tccttagagc aacacaccgc ttattatggc 1260
aaccaggtca atcaggatag ggctttgtct caaaccattt tgaattttaa agaagccctt 1320
agcactttag ggaacgactc aaaagcgatc aatagcggta tctctaactt gcctaacgct 1380
aagtcccttc aaaacatgac gcatgccact caaaacccta attcccaga aggtttgctc 1440
acttattctt tggataccag caaatacaac cagctccaaa ctgttgcgca agaattaggc 1500
55 aaaaaccctt ttaggcgcat cggcgtgatt aactatcaaa acaataacgg ggcgatgaac 1560
ggcatcgcg tgcaagcggg ctataagcaa ttcttttgca aaaaaggaa ttgggggtta 1620
aggtattatg gtttctttga ttataaccat gcttatatca aatctaattt ttttaactcg 1680
gcttctgatg tgtggactta tgggggtgggt atggacgcgc tttataactt catcaacgat 1740
aaaaacacca acttttttag caaaaataac aagctttctg tggggctttt tgggtggctt 1800
60 gcgttagccg ggacttcgtg gcttaatttc caacaagtga atttgacat gatgaatggc 1860
atttataacg ctaatgtcag cgcttctaac ttccaattt tgtttgattt aggccttga 1920
atgaacctcg ctaggcccaa gaaaaaagac agcgcacatg ccgctcagca tggcatggaa 1980
ttggcgctga aaatccccac cattaacacg gattattatt ctttcatggg ggctgaactc 2040
65 aaatacagaa ggctctatag cgtgtatctc aattatgtgt ttgcttacta a 2091

<212> Type : DNA
<211> Length : 2091

```

SequenceName : SEQ ID 484  
SequenceDescription :

## Sequence

5

-----

&lt;213&gt; OrganismName : Helicobacter pylori, strain J99

&lt;400&gt; PreSequenceString :

	atgaaaaatca	aaaaatccct	ctttgctctc	tctttctctc	tcatggcttc	attatcaagg	60
	gctgaagatg	acggatttta	catgagtgtg	ggctatcaaa	tcgggtgaagc	gggccaaaaa	120
10	gtgaaaaaca	ctggagcatt	acaaaatctt	gcagacagat	acgataactt	gagcaacctt	180
	ttaaaccaat	acaattactt	aaattcctta	gtcaatctag	ccagcacgoc	tagcgcgatt	240
	accggtgcga	ttgacaatct	aagctcaagc	gcgatcaatc	tcactagcgc	taccaccact	300
	tctccggcct	ttctcaatac	ggcttttagc	ctcaatgcgg	ctgtgggcat	gtggcaagtc	360
	atagcctttg	gcatcagctg	tgccctggc	cccaatcttg	gccagaaca	tttagaaaat	420
15	ggggggcgctt	gatcgtttga	caacacgcca	aactacagct	acaacaccgg	tagcggaacg	480
	accaccacca	cttgyaatgg	agccagtaat	gtagggccca	atgggtatcct	atctagcagc	540
	gaataaccag	ttctcaatac	cgcttatcaa	actatccaaa	ccgctttaaa	ccaaaaccac	600
	ggaggcgggga	tgcctgcctt	gaatagctcc	aaaaatatgg	tagtcaatat	caatcaaaact	660
	ttcacaaaaa	accctaccac	agaatacact	taccccgatg	ggaatggcaa	ttattattca	720
20	ggcggttcat	caatcccaat	ccagctaaag	attagttagc	tcaatgacgc	tgaaaacctt	780
	ttgcaacaag	atcgctactat	catcaatgtc	cttaccaccc	aaaaccgcga	tgtgaatggg	840
	ggcggtgggg	catgggggtt	tggcggttaag	accgggaatg	tgatggatat	ttttggcgat	900
	agtttttaac	ctattaacga	aatgatcaaa	aacgctcaag	ccgtttttaga	aaaaacccaa	960
	cagcttaacg	ctaataaaaa	cacccaaatc	acgcaaccag	acaattttcaa	cccctacact	1020
25	tctaagagaca	cgcagttcgc	tcaagaaatg	ctcaatagag	ctaacgctca	agcagagatt	1080
	ttgagcttag	cccacaaggt	agcggacaat	ttccacagca	ttcaagggcc	tatccaacaa	1140
	gatctagaag	aatgcaccgc	aggatcagct	gggtgtgatta	acgacaacac	ttatggttca	1200
	ggttgcgcgt	ttgtgaaaga	gactctcaat	tccttagagc	aacacaccgc	ttattatggc	1260
	aaccagggtca	atcaggatag	ggctttgtct	caaaccattt	tgaatttttaa	agaagccctt	1320
30	agcacttttag	ggaacgactc	aaaagcgatc	aatagcggtg	tctctaactt	gcctaacgct	1380
	aagtcctctc	aaaacatgac	gcattgccact	caaaacccta	attccccaga	aggtttgctc	1440
	acttattctt	tggataccag	caaatacaac	cagctccaaa	ctgttgcgca	agaattaggg	1500
	aaaaacccct	ttaggcgcat	cgcggtgatt	aactatcaaa	acaataacgg	ggcgatgaac	1560
	ggcatcgggc	tgcaagcggg	ctataagcaa	ttctttggca	aaaaaaggaa	ttgggggtta	1620
35	aggtattatg	gtttctttga	ttataacat	gcttatatca	aatctaattt	ttttaactcg	1680
	gcttctgatg	tgtggactta	tgggggtgggt	atggacgcgc	tttataactt	catcaacgat	1740
	aaaaacacca	acttttttag	caaaaataac	aagctttctg	tggggctttt	tgggtggctt	1800
	gcgttagccg	ggacttcgtg	gcttaattcc	caacaagtga	atttgaccat	gatgaatggc	1860
	atttataacg	ctaattgtcag	cgcttctaac	ttccaatttt	tgtttgattt	aggcttgaga	1920
40	atgaacctcg	ctaggcccaa	gaaaaaagac	agcgatcatg	ccgctcagca	tggcatggaa	1980
	ttggggcgtg	aaatcccccac	cattaacacg	gattattatt	cttcoatggg	ggctgaactc	2040
	aaatacagaa	ggctctatag	cgtgtatctc	aattatgtgt	ttgcttacta	g	2091

&lt;212&gt; Type : DNA

45

&lt;211&gt; Length : 2091

SequenceName : SEQ ID 485

SequenceDescription :

## Sequence

50

-----

&lt;213&gt; OrganismName : Helicobacter pylori, strain J99

&lt;400&gt; PreSequenceString :

	ttgcataaaa	aagttctgtt	ggctttaact	gccagcttga	tttgccaaga	gtctttgttc	60
	gctaaggata	aagactacac	tttgggcaag	gtttctactg	ccggtaaaaa	ggatagatct	120
55	gactattctg	ggcaggtcaa	tttgggttat	agcgggatta	ccgcgcctaa	gagttggcaa	180
	gatgaagaag	tgaaaaaata	cacaggaagc	cgcacgggtg	tctctaacaa	agcgctcacc	240
	caacaagcta	accaaagcat	tgaagaagct	ttacagaatg	tccccggtct	gcaaattagg	300
	aatgccacag	gtgtgggggc	tatgcctact	atccaaatcc	gtggcttttg	agcggggggg	360
	tcagggcata	gcgatgcgac	gctcatgtta	gttaatggta	ttcctgttta	tatggccctt	420
60	tacgtccaca	ttgagctaga	cattttccct	gttacctttc	aagccattga	tgcattgat	480
	gtgatcaaa	gtggaggcag	cgtgcaatat	gggccttaac	cttatggggg	tattgtcaat	540
	atcatcacta	aacctatccc	taatcaatgg	gaaaaccaa	cggtcgaaag	gatcacttat	600
	tgggctaagg	ctagaaacgc	tgggtttgct	gctccccctg	ataaaaccgg	cgatccttct	660
	ttcatcaagt	ctttaggcaa	caacctcctc	tataacactt	atgtgaggag	cggaggggat	720
65	atcaataagc	atgtgggtat	ccaagcgcaa	gctaactggg	ttagaggcca	aggctttagg	780
	gacaatagcc	cctctagtat	ttcaaacatg	tggctgggat	gggtctatga	catcaatgaa	840
	agcaatggga	ttaaagccta	ttaccaatac	tacgattttg	ctatcgccca	accgggatca	900

	ctcagcgagc	aagattacaa	aataaacgcg	ttcgctaatt	tgcgccctt	aaacaaaaa	960
	ggcgggcgct	cacaacgctt	tggggctgtg	tatgaaaacc	gcttcgggga	tttagacaga	1020
	gtggcgggga	ctttcagctt	cacttactac	ggcgagttga	tgactaggga	ctttcaggtg	1080
	agctctagct	acaatagcgc	taacatgggt	acttggttta	gcgaagcggc	atgcagggcg	1140
5	gcagggcttc	cggcagggtg	taacttggct	gtgccttatt	atgccactaa	ctacaatggg	1200
	tgggcggagg	ttataaaacc	tgtgcgttcc	attaacaacg	cttttgagcc	taaagtgaat	1260
	ctgatcgtca	ataccgggaa	agtcaggcaa	acctttatca	tgggtttgcg	tttcatgacc	1320
	accacttttt	tacaacgcca	atacttaaac	accaatgaat	gcgccactaa	aacgagcggt	1380
	gagggggcag	gcttcttgtg	tgagggccct	aacgtgatga	gcggttgga	acccacatc	1440
10	aagcatggcg	tttatagaaa	ctggaataac	tggcgcaaca	attacacagc	ggtctatttg	1500
	agcgatcgca	ttgaagcttg	ggacggggcg	tttttcatcg	tgcctgggtt	gcgctacgct	1560
	tttgtgcaat	acaacaacga	aaatgcgtct	aactggatgc	aaatccctga	gaaggattta	1620
	agaaaaatca	agcacatgaa	caattggatg	ccctcaacca	acattggctt	tatccctgtg	1680
	caaggcgatc	acaatgtgct	tacctacttc	aactaccaac	gctctttcgt	cccgccctca	1740
15	tttagacgttt	tgagctatgg	aggagcggag	tattttaccc	aacactttga	cacggtggaa	1800
	gcagggagcgc	gctacaccta	taaagataaa	ttcagcttca	atgcggacta	ctttaggatt	1860
	tgggcgcgcg	attttggcac	cgggcagtat	tcagctcata	cgagcgggoc	catgaaaggt	1920
	aatgtgcgcc	ccattaatgg	ctattctcaa	ggcgtggagc	tggaattgta	ttacaggccc	1980
	attagaggggt	tgcaattcca	tgccgctttc	aactacattg	acactcgtgt	aactagccat	2040
20	ggcccttttaa	ccgacttgaa	cggggatgtg	ctaaaaggga	ctagctataa	caagcatttc	2100
	ccctttgttaa	gcccctttcca	attcattttt	gacgtctcgt	acaattggcg	taaaaccacc	2160
	attgggtatct	ctagctatct	ttatagccgt	gcttatagcg	ggattagcaa	cagcgagca	2220
	ggaggctatt	atgggatgca	atactatagt	ggggggaaca	actatgaaag	cgttcttaat	2280
	agcgggttatc	aatgcgaagc	ttggtgtatg	accacaacatg	aagggctctt	gccttgggat	2340
25	tgggtgtgga	atgtccaaat	gagccaaatt	ttctgggaaa	acggaagaca	cagagttaca	2400
	ggaagctttac	aatcaataa	catcttcaac	atgaagtatt	attttacagg	gattggctct	2460
	agccctgcag	gcttgcaacc	tgcgccctgga	agatcggtta	cagcgtatct	gaactacact	2520
	ttctaa						2526
	<212> Type : DNA						
30	<211> Length : 2526						
	SequenceName : SEQ ID 486						
	SequenceDescription :						
	Sequence						
35	-----						
	<213> OrganismName : Helicobacter pylori, strain J99						
	<400> PreSequenceString :						
	atgaaaaaaa	cccttttact	ctctctctcc	gcttcacgcg	ttttaaacgc	tgaagacaac	60
	ggctttttta	tcagcgcggg	ctatcaaata	ggtgaagccg	ctcaaatggg	gaaaaacacc	120
40	ggcgaattga	aaaaactttc	agacacttat	gagaatttga	gcaacctttt	aaccaatttt	180
	aacaacctca	atcaggcggt	aacgaacgcg	agcagccctt	cagaaatcaa	tgctgcgatc	240
	gataatttaa	aagcaaacac	gcaaggcgta	atttgcgaaa	aaaccaatcc	ccggcgctat	300
	caagcgggtg	atgtggcgct	caatgcggcg	gtagggctgt	ggaatgtcat	cgctataat	360
	gtccaatgcg	gtcctggtaa	cagtggacaa	caaagcgtaa	cctttgaggg	ccaaccagga	420
45	cataattcaa	gttccattaa	ttgcaattta	accggttata	acaacggggg	tagcggccct	480
	ttatccattg	agaattttta	aaagcttaat	caggcttatc	aaactatcca	acaagcttta	540
	aaacaagata	gcggtatttc	tgttttggat	agtgcaggaa	aacaagtaac	tataacaata	600
	acaacgcaaa	ctaattggag	taataaaaag	gaaactacta	ctactactac	tactactaat	660
	gacgctcaaa	cccttttgca	agaagccagt	aaaatgataa	gcgtccctac	tacaaactgc	720
50	ccatgggtca	atcacaaatc	aggacaaaac	gggggcgcgc	cgtgggggtt	agatacggca	780
	gggaatgtgt	gtcaggtttt	tgccacggaa	tttagcgccg	ttactagcat	gatcaaaaac	840
	gccccagaaa	tcgtaacgca	agctcaaagc	cttaaccagc	aaaacaatca	aaacgcgcgc	900
	caagatttaa	atccctacac	ctctgctgat	agggctttcg	ctcaaaaacat	gctcaatcac	960
	gcgcaagcgc	aagccaagat	acttgagcta	gccgatcaaa	tgaaaaaaga	ccttaacact	1020
55	atcccaagcc	aatttatcac	aaattacttg	gcagcttgcc	acaatggggg	tgggacatta	1080
	cctgatgcgg	gggttactaa	caacacttgg	ggggccgggt	gcgcgtatgt	ggaagagacg	1140
	ataacggctt	tgaacaacag	ccttgcgcac	tttggcactc	aagctgagca	aatcaagcaa	1200
	tctgagttgt	ttggcgcgac	catacttgat	tttagaggca	gccttagtaa	tttaaacaaac	1260
	acttataaca	gcataccac	gaccgcttca	aacacgccta	attccccatt	ccttaaaaat	1320
60	ttgataagcc	aatccactaa	ccctaataac	ccggggggct	tacaggccgt	ttatcaagtc	1380
	aaccaagcgc	cttattcgca	attattaagc	gccacgcaag	aattagggca	taaccctttc	1440
	agacgcgttg	tattatcag	ctctcaaac	ccatgaatgg	gatcgggtgtg		1500
	caagtgggct	acaaacaatt	ttttggtgaa	aagagaaggt	gggggttaag	gtattacggc	1560
	ttttttgact	ataacatg	ttatatcaaa	tctagctttt	tcaattcggc	ttctgatgtg	1620
65	ttcacttatg	gggtagggac	agatgtcctc	tataacttta	tcaatgataa	aaccacaaa	1680
	aacagcaaga	tttcttttgg	ggtgtttggg	tttagtgcgt	tagctggcac	ttcatggctg	1740
	aattcccagt	atgtgaattt	agcgaccttc	aataatttct	atagcgctaa	aatgaatgtg	1800

gccaattttcc aattcttgggt caatttaggc ttgagaatga acctcgctaa gaataagaaa 1860  
 aaagcgagcg atcatgcggc tcagcatggc gtggaattag gcgtgaagat cccacgac 1920  
 aacacgaatt actattcttt gctagggcact caactccaat accgaagatt gtatagcgtg 1980  
 tatttgaatt atgtgttcgc ttactaa 2007

5 <212> Type : DNA  
 <211> Length : 2007  
 SequenceName : SEQ ID 487  
 SequenceDescription :

10 Sequence  
 -----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

15 atgagaaaaac tattcatccc acttttatta ttcagcgctt tagaagcgaa cgagaaaaaac 60  
 ggcttttttca tagaagccgg ctttgaaact gggctattag aaggcacaca aacgcaagaa 120  
 aaaagacaca ccaccacaaa aaacacttac gcaacttaca attattttacc cacagacacg 180  
 attttaaaaa gagcgggctaa tttattcacc aatgccgaag cgatttcaaa attaaaattc 240  
 tcatctttat cccctgttag agtgttggat atgtataatg gtcaattaac tatagaaaaac 300  
 ttcttgcctt ataatttaaa taatgttaag cttagtttta cagacgctca aggcaacacg 360  
 attgatctag gcgtgataga gaccatcccc aaacactcta agattgtttt acccgggggag 420  
 gcggtttgata gtttaaaaga ggcgtttgat aaaattgacc cctatacttt atttcttcca 480  
 aaatttgaaag ccactagcac ttctatttct gatactaaca cgcagagggt gtttgaaacg 540  
 ctcaataaca ttaaaacaaa tcttataatg aaatatagta atgaaaatcc aaacaatttc 600  
 aacacttgtc cttacaataa taatggtaat acaaaaaatg attgttggca aaatttcacc 660  
 25 ccacaaacgg cagaagaatt caccaatttc atgttgaaca tgatcgctgt cttagactcc 720  
 caatcctggg gcgctgcgat cttaaacgct ccttttgaat tcaactaacg ctcaacagat 780  
 tgcgatagcg atccttcaaa atgcgtaaat cccggagtaa atgggcgtgt tgatactaaa 840  
 gtcgatcaac aatataact caacaaacaa ggtattatta ataatttttag aaaaaaata 900  
 gaaatttgatg cgttggtttt aaaaaattca ggggttggtag ggtagccaa tggatatggc 960  
 30 aatgatgggtg cttctggcac attaggggta ggaagcctatg ctttagatcc taaaaaactc 1020  
 tttggcaacg accttaagac tatcaattta gaagatttaa gaaccatctt gcatgaattc 1080  
 agccacacta aaggctatgg gcataacggg aatatgacct atcaaaagat gccggtaacg 1140  
 aaagatgggtc aagtggaaaa ggatagtaat ggcaagccaa aagattctga tggcctccc 1200  
 tataatgtgt gttcgttcta tgggggatcc ctttccctag caactaccct 1260  
 35 aattccatct atcacaattg tgcggatgtc ccggctggct ttttaggggt aacagcagcg 1320  
 gtttggcagc agctcatcaa tcaaaacgcc ttgccgatca actacgctaa cttggggagt 1380  
 caaacaactt acaacctaaa cgtagttta aacacgcaag atttagccaa ttccatgtc 1440  
 agcaccatcc aaaaaacctt tgtaactctt agcgttacca accaccattt ttcaaacgca 1500  
 tcgcaaagtt ttagaagccc tattttaggg gttaacgcta aaataggcta tcaaaactac 1560  
 40 tttaatgatt tcatagggtt ggcttattat ggcacatca aatacaatta cgctaaagct 1620  
 gttaaatcaa aagtcacgca attgagctat ggtgggggga tagatttgtt attggatttc 1680  
 atcaccactt actccaataa aaatagccct acaggcattc aaaccaaag gaatttttct 1740  
 tcatcttttg gtatcttttg ggggttaagg ggcttgata acagctatta tgtgttgaa 1800  
 aaagtcaaaag gaagcggcaa ttttagatgt gctaccgggt tgaactaccg ctataagcat 1860  
 45 tctaaatatt ctgtagggat tagcatccct ttaatccaaa gaaaagctag cgtcgtttct 1920  
 agcgggtggc attatacgaa ctcttttggg ttcaatgaag gggctagcca ctttaagggtg 1980  
 tttttcaatt acgggtgggt gtttttag 2007

<212> Type : DNA  
 <211> Length : 2007  
 SequenceName : SEQ ID 488  
 SequenceDescription :

50 Sequence  
 -----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

55 atgaataaaa caacaattaa aatattaatg ggcattggcgt tattatcatc gcttcaagcc 60  
 gcagaggcag agcttgatga aaaatcaaaa aaacctaaat ttgcggatag gaatacgttt 120  
 tatttagggg tgggtatca gcttagcgcg atcaacacgt ctttttagcac cagttctata 180  
 60 gataaatcgt atttcatgac cggcaatggg tttggcgtgg tggtgggggg gaaattttgtg 240  
 gctaaaacgc aagctgtaga gcatgtgggt tttcgttacg ggttgtttta tgatcagacc 300  
 ttttcttctc acaaatccta tatttctacc tatgggttag aatttagcgg tttgtgggac 360  
 gctttcaatt cgccaaagat gtttttgggg ttggagtttg gcttaggcat cgctggggcg 420  
 acttacatgc caggaggggc catgcatggg attatcgctc aatatttagg caaagaaaaat 480  
 65 tcgcttttcc aattgcttgt gaaagtgggt tttcgttttg gctttttcca caatgaaatc 540  
 acccttgggt tgaattccc tgctattcct aacaaaaaaa cggaaatcgt tgatggcttg 600  
 agcgcgacca ctttatggca acgcttgccg gtagcctatt tcaattatat ctataatttt 660

tag  
 <212> Type : DNA  
 <211> Length : 663  
 SequenceName : SEQ ID 489  
 SequenceDescription :

5

Sequence  
 -----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

10  
 atgaaaaaaaaa cgaaaaaaaaac gattctgctt tctctaactc ttgcggcgctc attgctcccat 60  
 gctgaagaca acggcgctttt ttttaagcgtg ggctatcaaa tcggtgaagc gggtcaaaaag 120  
 gtgaaaaaacg ccgacaaggt acaaaagctt tcagacgttt atgaacaatt aagcaagctt 180  
 ttagccaacg ataatggcac tagctcaaaa acaagcgcgc aagcgatcaa tcaagcgggt 240  
 15 aataatttga atgaaagcgc aaaaacttta gccggtggga caaccaattc ccctgcctat 300  
 caagccacgc ttttagcatt gagatcggcg ttagggttat ggaatagcat gggtatgctg 360  
 gtcgtatgctc cagggttatat taaaaaacgc gccgaaaaa atcaaaaaa tttccactac 420  
 accgatgaga atggcaacgc cactacaatc aattgcggtg ggagcacaaa tagtaatggc 480  
 actcatagtc ctaatggcac aaatacatta aaagcagaca aaaatgtttc tctatctatt 540  
 20 gagcaatatg aaaaaatcca tgaagcctat caaatccttt caaaggcttt aaaacaagct 600  
 gggcttgctc ctttaaatag caaaggggaa aagttagaag cgcattgaac cacatcaaag 660  
 gatcaacaag gaacatccag tgaccaaact acaaccacaa cttctgttat tgatacgact 720  
 aatgatgcgc aaaatctttt gactcaagcg caaacgattg tcaataccct taaagattat 780  
 tgccccatgt tgatagcgaa atctagtagt aatgggtggaa ctaatggcgc aaacaccctt 840  
 25 tcatggcaaa cagccggtgg cggaacaaat tcatgtgcga cttttggtgc ggagttagt 900  
 gctatttccag acatgattag taacgctcaa aaaatcgctc aagaaaccca acaacttaac 960  
 gccaaccaac ccaaaaatat caccacaacc aataatttca accttaactc tcctggcagt 1020  
 cttacggctt tagctcaaa gctgctcaaa aacgctcaat ctcaaacaga aattttaaaa 1080  
 ttagccaatc aggtagcaag cgattttgac aaactttctt caggctatct taaagattac 1140  
 30 atagggaaat gcgatgtgag tgggtgtgag agttcaaata tgacaccgca aaatatgaat 1200  
 accacttggg ggaagggtg cgcgggcggt gaagaaactc taacttcgtt aaaagcaagc 1260  
 accactgatt ttaacaacca gacaacgccc caactcgatc aagcgcaaac cctagccaat 1320  
 acccttactc aagaactcgc caataaccct ttcaaacgag tgggtatcat tggctctcaa 1380  
 35 accaataacg gggcgatgaa tggccttggg gtgcaagcgg gttataagca attctttggg 1440  
 caaaaaagaa ggtgggggtt aaggtattac ggcttttttg actacaacca tacctacatc 1500  
 aaatccagct tttttaactc gtcttctgac gttttgactt atgggggtgg tagcgattta 1560  
 ttgtttaatt tcatcaatga taaaaacacc aatttcttag gcaagaacaa taagatttct 1620  
 gtggggcttt ttggaggtat cgccttagca gggacttcgt ggcttaattc tcaattcgtg 1680  
 aatttaaaaa ccatcagcaa tgtttatagc gctaaagtga atacggctaa tttccaattc 1740  
 40 ttattcaatt taggcttgag aaccaatctc gctaggccta agaaaaaaga cagcgatcat 1800  
 tccgcgcaac taggcattga atggcggtg aaaaacccta ccattaacac gaattactat 1860  
 tcttacttgg gaactaaact agaataccga agactctata gcgtgtatct caattatgtg 1920  
 tttgcgtatt ga 1932

<212> Type : DNA  
 <211> Length : 1932  
 SequenceName : SEQ ID 490  
 SequenceDescription :

45

Sequence  
 -----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

50  
 atgaaaaaaaaa cgatttttact ttctctcatg gtgtcatcgc tctttgctga aaatgacggc 60  
 gtttatatga gcgtgggcta tcaaatcggc gaagccgcac aaatggtgaa aaacaccggc 120  
 55 gaaatccaaa aagtctccaa cgcttacgaa aatttgaaca accttttaac ccgtataaat 180  
 gaactcaaac aaacggcctc taacactgat tcaagcaccg ctcaagcgat tgacaatcta 240  
 gaaaagagcg ctacgagatt gaaaacgacc cctaataacc ccaatcaagc cgtgtcctca 300  
 gcgctcagct ctgcgggtgg catgtggcaa gtgatagcct ctaatttagc caacaactcg 360  
 ctatcttcta gcgaatacga aaaactcaaa gcgacttctc aattgctcca aaatacccta 420  
 60 gaaaaataaaa acaataatct taaaattgaa atgactatg accagctttt aactcaagct 480  
 agtaccatta ttaataccct tcaaacgcaa tggccaggcg tagatggggg caatggcaaa 540  
 ccatggggca ttaatacaag cgggaacgca tgcgtatatt ttggtagcac ctttaacgcc 600  
 attaatagca tgattgatag cgctaaaaaa gccgcgcgag atgcccgaag aactgcccga 660  
 gaaagtccaa accaacaanaa cgcgtttacc aacgctgatt tcaataaaaa cctcaatcaa 720  
 65 gtctcaagcg ttaataatga caccatctct tactctcaaa gggacaattt agaaaccatc 780  
 tacaacacca ttcaaaaaac gcctaattct aaagggtttc aaagtttggg gagccggctc 840  
 agctatagtt attctctcaa cgaaacccaa tattctcaat tccaaactac caccaaagag 900

```

tttgggtcata accccttcag aagcgtggga ttaatcaact ctcaaagcaa taacggggcg      960
atgaatggcg tgggcgtgca actaggctat aagcaattct ttgggaaaaa taaatttttt 1020
gggatccggt attatggctt ttttgattac aactatgcgt atatcaaata caattttttc 1080
aactccgctt ccaatgtttt cacctatggc gcgggcagtg atcttttatt gaacttcctc 1140
5 aatggcggat cggatcgaaa ccgcaaagtc tcttttggca tttttggggg catcgctcta 1200
gcgggaaacga catggcttaa taaccaatct gcgaatttaa aaatcaccaa tagcgcttac 1260
agcgctaaga tcaacaacac caattttcaa ttcttgttca ataccgggtt aaggcttcaa 1320
gggatccatc atggcattga attaggcggtg aaaatcccta cgatcaacac caattactat 1380
tctttcatgg gcgctaaatt agcctaccgc aggccttata gcttgtacct caattatggt 1440
10 ttggcttatt ga 1452
<212> Type : DNA
<211> Length : 1452
      SequenceName : SEQ ID 491
      SequenceDescription :

15 Sequence
-----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
20 atgccaaagg caagtcagggt tttattcttt ggagcggttt taagcacttc tttacaagggt      60
   tttgaagcta agctcaacgg ctttgtggat caatccagca cgatcggttt taaccagcat 120
   aaaatcaata aagaaagggt catctaccct atgcagcaat tcgcaacgat tgcgggctat 180
   ttagggcttg gttttagcct gttacccaaa aagggtttcag accatgttct aaaaggcaaa 240
   atagggggca tggtcggatc tattttctat gacggcacga agaagtttga agacggctct 300
25 gtggcttaca acctctttgg ttattacgat ggggtttatg gggctctata taatatctta 360
   caaacggata gccttgagac acagaacatg aaacacaaca aaaatgtccg caattatgtc 420
   tttagcgacg cgtatttaga atacgcttat aagaattatt ttgaaataaa agccgggctc 480
   tatctctcca ctatgcctta taaaagcggg caaacgcaag gctttcaagt ttctggggca 540
   tacaagcatg cgcgcttgac ttggttttagc tcaatgggga gggcggtttg ttatggttcg 600
30 tttttaatgg attggtttgc cgcaacggac acttatagcg gaggttttac caaaaacaat 660
   aatggagggt atgatagcca tgggcgaaag gtgctttatg gcacgcgatg ggtgcaactc 720
   acctataaac ctcatcggtt cctcatagaa ggccttttatt acctttcgcc tcaaatcttt 780
   aacgctccag gcgttaagat tgggtgggac tctaacccta attttagcgg cacaggcttt 840
   cgctctgata ggcctatcat aggttttttc cccatttact acctttggat gatcggttaa 900
35 tccaatggaa gcccggtcta tagatacgac acgcctgcca ctcaaacagg gcaaacctc 960
   attatccgcc aacgctttga catcaacaat tacaatgttt caatcgcttt ttataaagtc 1020
   tttcaaacgc ctaatggttg gataggcaac atgggggaat caagcgggtg gatcatgggg 1080
   agtaacagcg tctatgcagg tttacagcgc acagccctta aaagagacgc cgctaccatt 1140
   ttctttctt gtggtggcac tcattttgcc aaaaaattca catggaatt cgccacacaa 1200
40 tactccaatt cagtgtctc ttgggaagca agagcgatga tctctttagg ctataaattc 1260
   actgaatatt tgagcggtag cgtggatctt gcgtattatg gcgtgcatac taacaaaggc 1320
   tttaaaccgg gtgaaaacgg gcctgtgcct aaaaacttcc ccgcctttaa ttctgacagg 1380
   agcgctttat acacggctct agtagcgtct ttttga 1416
<212> Type : DNA
45 <211> Length : 1416
      SequenceName : SEQ ID 492
      SequenceDescription :

50 Sequence
-----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
atgctaaggc tcgttagtaa aacgatttgt ttgtctttaa ttagcttggt caacccttta      60
gaagcctttc aaaaacacca aaaagacgtc tttttttagt aagctgggtt tgaaaccggg 120
55 ctattagaag ggcgcgcaaac caaagaacaa gcaatagccc aaaacaccca aaacacccaa 180
   aaaatttatg aaaacccctt aaccaccccc caaactaaag aacaacctaa agaacaaaaa 240
   aaaagcgata cagccacccc acaaagcgct tatgggagat actacatcct ccaaaacacc 300
   attttagaaa aagcgactga gctattcaca gcggcttaata tcaatggcaa cggcttaact 360
   ttttattctc aaaaccctgt gtatgtgatg gcatacaata aagataatgc cgagtttgaa 420
60 ggctatggca ataacagcgt ggttggtgata caaaacttcc tgccctacaa tttaaacaa 480
   attgagctga gttatacaga cgctcaaggc aaggcgatca atttagcgt gatagagacc 540
   atccctaaag atttcaaat catcttgctt gcaagtttgt ttaataattt ttcaaacgat 600
   tcaccattca actctgatgg cctccaacaa ctccaaacca ctaccacccc cttttctgat 660
   gctaacacgc agagtgtgtt tgaaaagctc agtcaaatca cgaccaatct tcaaatgact 720
65 tatgagaata cagacccctt ttctagcggc aacaacgatc ctaatggccc tctcgcttct 780
   cctaaacctc attatgaatg ccctgggttat aaaaagagt gtcaagtgcg ttcggtgtct 840
   ttcacccccc aaaccgcaga agaattgacc aatttaatgt tagacatgat tgcggtggtt 900

```



```

gactcctaaat cttgggaaga agccgtttta aacgccccct tocaattttc taacagccca 960
tcagagtgcg gcattgatta ccctaaatgc gtttaaccct ttaataacgg gcttggtgat 1020
cctaaagatg aaaaatacgc gctaacccca gaagagggtta tcaatagtta tagagtcgcc 1080
aatgaactta ccgtgaacct cttgaatgcg gccaaaggggt ttctagggct aggatcccaa 1140
5 cttgggtagcg ccaatgcccc cgatgatgat ggcttcaatc aagggtgttt agggatagcg 1200
ccttttgctt tagatccctga aaaaattgttc ggtaaaaaatt tgaataaagt ggctattttg 1260
gcattaagag acattatcca tgaatatggg catactttag gctataccca taacgggaac 1320
atgacttatc aaaggggtcg tttatgccaa gaaggaaacg ggccagaggc acgctgtgag 1380
10 ggcgggcatg aagtggagaa aaacggcaaa gaagagctag aattcagtaa tgggcatgaa 1440
gtgcgagacc atgatgggtta cacctatgat gtttgctctc gttttggcgg caaaaatcag 1500
cccgttttcc cttagcaatta cccaatttcc atctatacca attgcgctca agtccccgct 1560
gggcttatag gggttactac cgctgtttgg caacagctca tcaatcaaaa cgccctgccc 1620
attaatttcg ctaacctaaa tagccaaacc agccatttaa acgcccgggt gaatgcgcaa 1680
aattttgcaa cctctatggg cagcgcgatc gcgaaaaaatt ttccaccac ttccactacc 1740
15 acttacgcgt cttcaagtaa gaattttaga agccctattt taggggttaa tgttaaaata 1800
ggctaccaac attatttcaa tgactacatc ggggttagcct attacggcat tatccaatac 1860
aactacgcct aagctaacga tgaaaaaatc cagcaattaa gctatgggtg ggggaatggat 1920
gtgctgtttg atttcatcac cacttacacc aataaaaaagc aagaccatcc aactaaaaag 1980
gtttttgctt cctcttttgg ggtgtttggg ggggttaagg gcttatataa tagctactat 2040
20 gtcttcaatc aagtcaaagg aagcggtaat ttagatatag taaccgggtt taattaccgc 2100
tacaagcatt ctaaatattc cataggcggt agcgttcctt taatccaaag cggtattaag 2160
atcgcttcta ataattggtat ctatgcagac ctgtgtgttt tgaatgaagg gggtagccat 2220
tttaagtggt tttttaatta cgggtgggta ttttaa 2256
<212> Type : DNA
25 <211> Length : 2256
      SequenceName : SEQ ID 493
      SequenceDescription :

Sequence
30 -----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
ttgcaaaact ttgtttttaa taaaaaatgg ctcatctatt cttagcctact ccccttattt 60
tttcttaacc ctttaatggc agaagacgat ggggtttttta tgggggtgag ttatcaaaact 120
35 tctttggccg ttcaaagggg ggataactca gggcttaacg ccagtcaaga cgcattccact 180
tatatccgcc aaaaacgctat cgctctagaa tctgcccggg tgccctttagc ctattatttta 240
gaagcgatgg gccaacaaaac gagagtcctta atgcaaatgc tctgccctga tccttctaaa 300
agatgtttgc tctatgcagg gggctatcaa aacggacaaa ataataacgg cgatacaggc 360
aacaaccccc caagaggcaa tgtcaatgcc acctttgata tgcaatctct agtcaataat 420
40 ttaaacaaagc tcacccaact catcgcgcaa actttaatcc gtaaccctga aaatcttcct 480
aactccaaag tctttaacgt caaattttggc aatcaaagca ctgttattgc attgcctgag 540
ggctagccca ataccatgga cgcttttaaac atagacatca ccaacgcttt aaccacgctc 600
tgggtataacc aaaccttaac gaataaatct tttagcacc ctagtaacac ttctgtgaat 660
tttagccccc aagtcttgca acacctttta caagacggct tagccacagc aaataataat 720
45 caaaccatct gcagcactca aaaccaatgc accgccacta atgaagctaa atctatcgct 780
caaaacgccc aaacatctct aaacgaatgc atcgacagc ggatttttagg gggcttagcc 840
aatgaaaagc aatttggtct cacttacaac aaagccccc atggcagcga ttcccaacaa 900
ggctatcaaa gcttttagcg cccgggttat tacaccaaaa acgacaacac cacgcaagcg 960
cccttaaaag cattaccgc tggagcgaca attggatcag gcaatggcca atacacctac 1020
50 caccacagct cggcagtcga ttatttagcc gatagcatca tgcctaattg catcacgct 1080
tctatgat tt ttcaggcat gcaaaatttc gccataaag ccgctaaact gataggcact 1140
tcaagctata accagatgca agatgcgatc aactatgggg aaagcttgct tagtaacacc 1200
gtagectatg gggattttcat caccaattgg gtgcggccct atttggtatt aaacaataaa 1260
55 gggttgaa tt tcttgcttaa ttatgggggg caattgaatg gcgctaataa tcaaacccca 1320
caattaaccc cacaacaagc ccaacaagaa caaaaagtga tcatgaacca attagagcaa 1380
gccacaaa cg cccccacccc cgcgcaataa aacaggattt tagccaaacc ctattcccc 1440
acggcaaaa ct ttttaattggc ttatgggctc tatcgctcta aagcagtgat tggcggagt 1500
attgatgaaa tgcaaacctaa agtgaatcaa gtctatcaaa tgggctttgc taggaatttt 1560
60 ttggagcata actctaattc taataacatg aacggctttg gcgtgaaaat gggctataag 1620
caattttt cg gcaaaaagcg catgtttggg cttaggtatt atgggtttta tgattttgg 1680
tacgctcaat ttggcacaga atcttcttta gtgaaagcca ccctctctag ctatggagcg 1740
ggcacaga ct ttctttatac gtgttttacc cgaaaaagag ggactgaagc gatagatata 1800
gggttttt tg cgggtatcca acttgcaggg caaacctgga aaacgaattt tttagatcaa 1860
gtggatggca accatcttaa acctaaggac acttctttcc aattcctttt tgattttggg 1920
65 ataaggacca atttttccaa aatcgctcat caaaaaagat cccgtttttc tcaagggata 1980
gaatttggcc ttaaaatacc ggtgctttat cacacctatt accaatcaga aggcgttaca 2040
gcgaagta ta gaagagactt tagtttttat gtgggctaca acataggctt ttga 2094

```

<212> Type : DNA  
 <211> Length : 2094  
 SequenceName : SEQ ID 494  
 SequenceDescription :

## Sequence

-----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

10	atgaaaaaga caattctact ctctctctct ctctctctcg cttcatcgct cttgcacgct	60
	gaagacaacg gcttttttgt gagcgcgggc tatcaaactg gcgaagcggg gcaaatgggtc	120
	aaaaacaccc gtgaattgaa aaacttgaac gaaaaatacg agcaattaag ccagtattta	180
	aatcaagtgg cttcgttgaa gcaaagcatt caaaacgcca acaacattga gctgggtcaat	240
15	agctctttta actattttaa aagctttacc aacaacaact acaacagcac caccaatcg	300
	cccattcttta acgccgtgca agccgttatc acttcggtat tgggtttttg gagtctttat	360
	gcgggggaact atctcacttt ttttgtgggt aataaggata ctcaaaaacc cgtagtgtc	420
	cagggttaacc ctcccttttc aactattgtt caaaactgct caggaattga aaactgcgcg	480
	atgaatcaaa ccacttatga taagatgaaa aagctcgtcg aagatctcca agcagcccaa	540
20	caaaacgcta ccactaaagc gaacaatctt tgcgctttat ccggatgcgc cacaacacaa	600
	ggcctaaaac caagctcaac cgtaagcaac gctcttaact tagcgcaaca gcttatggat	660
	ttgatcgcaa acactaagac ggctatgatg tggaaaaata tcgctatcgc tggcggtttca	720
	aacgtatccg gcgctatcga ttccactggc taccacaacgc aatacgcggg gttaacaac	780
	attaaggcga tgatacctat cttgcaacaa gcggttacgc tttctcaaaag taaccacaca	840
25	ttatctgcta gcttgcaagc tcaagctaca ggatctcaaa caaaccccaa attcgctaaa	900
	gacatctacg ctttcgctca aaaccaaag caagctattt cttacgctca agacattttc	960
	aacctcttta gttctatccc taaagatcag tatcgttatt tagagaaagc ctatttgaaa	1020
	ataccacatg cgggtaaaaa gcctactaac ccttacagac aggaggtgaa tttaaaccaa	1080
	gaaattcaaa cgatccaaaa caatgtgagt tattatggta atcgggtgga tgcggcttta	1140
30	agcgtggcta aagatgttta taatttaaaa tccaatcaaa cagaaatcgt aaccacctat	1200
	aacaacgcta agaatttgag ccaagagatt tctaaactcc cctataacca agtcaataca	1260
	aaagacatta tcacactgcc ttacgatcaa aacgctccgg cagcgggcca atacaactac	1320
	cagatcaacc cagagcagca atccaatctt tctcaagctt tagcggcgat gagcaataac	1380
	ccctttaaaa aagtgggcat gatcagctct caaaacaata acggcgcttt gaacgggctt	1440
35	ggcgtgcaag tgggttataa acaattcttt ggcgaaagca aaagatgggg gttaagggtat	1500
	tatgggttct ttgattacaa ccacggctat atcaaatcca gcttttttaa ttcttcttct	1560
	gatatatgga cttatggcgg tgggagcgtat ttgttagtga attttatcaa cgatagcatc	1620
	acaagaaaaga acaacaagct ttctgtgggt ctttttgggt gtatccaact agcagggact	1680
	acatggctta attctcaata catgaattta acagcgttca ataaccctta cagcgcgaaa	1740
40	gtcaatgctt ccaatttcca atttttggtc aatctcggct tgaggacgaa tctcgctaca	1800
	gctaagaaaa aagacagcga acgttcgcgc caacatggcg ttgaactggg cattaaaatc	1860
	ccataccatta acaccaatta ttattctttt ctaggcacta agctagaata cagaaggctt	1920
	tatagcgtgt atctcaatta tgtgtttgct tatta	1956

<212> Type : DNA  
 <211> Length : 1956  
 SequenceName : SEQ ID 495  
 SequenceDescription :

## Sequence

-----

<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

50	atgttaaaac tcgccagtaa aacgatttgt ttgtccctaa tcagctcatt cagggctgta	60
	gaagcctttc aaaaacacca aaaagacggc tttttcatag aagccggctt tgaaaccggg	120
55	ctattacaag gcacacaaac ccaagaacaa accatagcca ccaactcaaga aaaaccctaa	180
	cccaaaccca aacccaaaacc cattaccct caaagcacct atgggaaata ctacatctcc	240
	caaagcacca ttttaaagaa tgcgactgag ttgtttgcag aggataatat caccaactta	300
	accttttact ctcaaaaccc tgtgtatgta accgcttata accaagaaag cgctgaagaa	360
	gctggctatg gtaataacag cttgattatg atacaaaact tcttgcttta taacttgaa	420
60	aacattgagc tgagttacac ggacgatcaa ggcaatgtgg tcagtttggg cgtgatagag	480
	actatcccta aacaattcca aatcattctg cccgcaagct tgtttaacga cccacagctt	540
	aacgcgcgat gcttccaaca actccaaacc aacaccacac gattttctga tgccagcacg	600
	cagaatctgt ttaacaagct cagcaagggt acaaccaatc ttcaaatgac ttatatcaat	660
	tacaaccaat tttctagcgg taacggcagt ggctctaaac ccccatgccc cccatagcaa	720
65	aaccaagcaa attgtgtggc taaagtgcgc cctttcacct ctcaagacgc taaaaatttg	780
	accaatttaa tgctgaacat gatggcgggt ttgtattcta aatcttggga agacgcggtc	840
	ttaaacgctc ctttccaatt cagcgacaac aacctgtcag cgccatgtta ttctgattac	900

```

cttacatgcg tgaatcctta caacgatggg cttgttgatc ctaaattgat cgccaaaaat 960
aaaggagatg aatacaatat agaaaacggg caaacaggct cagtgatatt aacgcgcgaa 1020
gatgttatct atagctatag agtcgcta atattttatg tgaatctctt gccacaaga 1080
ggaggggatt tagggttagg gtctcaatat ggtggcccg atggccagg cgatgatggc 1140
5 accaattttg gcgctttagg gatattgtcc ctttcttag accctgaaat attgtttggc 1200
aaagaattga ataaagtcgc catcatgcaa ttaagagaca tcatccatga atacggccat 1260
acttttaggct atacgcataa cgggaacatg acttatcaaa gagtgcgcat gtgcgaagaa 1320
aacaatgggc cagaagagcg ctgtcagggc ggaaggatag agcaagtggg tgggaaagaa 1380
gtgcaagtgt ttgacaacgg gcatgaagtg cgagacaccg atggctctac ctatgatgtg 1440
10 tgttctcggt ttaaagataa gccctataca gccggcagct atcctaattc catctatacc 1500
gattgtctctc aagtccccgc tgggcttata ggcgttacca gcgctgtttg gcaacaactc 1560
attgatcaaa acgcccctacc ggtggatttt actaatttga gcagccaaac caactatttg 1620
aacgccagct tgaacacgca agactttgog accaccatgc ttagcgcgat cagtcaaagc 1680
ctttctcgtt. ctaaatctag gccactact tcatcgagtt caaaaacctc acggcccttt 1740
15 ggagccccc tattaggcgt taatcttaa atgggctatc aaaaatattt taatgattat 1800
ctagggttgt cttcttatgg cattatcaaa tacaactacg ctcaagccaa caacgaaaa 1860
atccagcaat taagctatgg cgtgggaatg gatgtgctgt ttgatttcat caccaattac 1920
actaacgaaa agaaccocaa aagcaatcta accaagaaag ttttcacttc ctctctggg 1980
gtgtttgggg ggttaagggg cttatacaac agctattatt tgttgaacca atacaaagg 2040
20 agcggtaatt taaatgtgac cgggtgggtt aattaccgct acaagcattc caaatattct 2100
ataggcatta gcgttccttt ggtccagttg aaatctagga tcgtttctag cgatggtgct 2160
tataccaatt ctatccctt caatgaaggg ggcagtcatt ttaaagtgtt ttttaattac 2220
gggtggattt tctaa 2235
<212> Type : DNA
25 <211> Length : 2235
      SequenceName : SEQ ID 496
      SequenceDescription :

Sequence
-----
30 <213> OrganismName : Helicobacter pylori, strain J99
    <400> PreSequenceString :
atgagaaaaa tattcatccc acttttatta ttcagcgctt tagaagcgaa cgagaaaaac 60
ggctttttta tagaagccgg ctttgaact gggctattag aaggcacaca aacgcaagaa 120
35 aaaagacaca ccaccacaaa aaacacttac gcaacttaca attatttacc cacagacacg 180
attttaaaaa gagcggctaa tttattcacc aatgcggaag cgattttcaa attaaaattc 240
tcatctttat cccctgttag agtgttgtat atgtataatg gtcaattaac tatagaaaa 300
tccttgcttt ataatttaaa taatgttaag cttagtttta cagacgctca aggcaatgtg 360
atcgatctag gcgtgataga gactatcccc aaacactcta agattgtttt gcccgagag 420
40 gcatttgata gtctaaaaat tgacccctat actttatttc ttccaaaaat tgaagccact 480
agcactttcta tttctgacgc taacacgcag aggggtgtttg aaacgctcaa taagattaag 540
acaaaatttg tcgtaaatga accaaattta aagatcacga aaatcattgg 600
gaagccttta cccacaaaac cgcagaagaa ttcactaatt taatgttgaa catgatcgct 660
gttttagact cccaatcttg gggcgatcgc atcttaaacg ctctttttga gttcactaac 720
45 agcccaacag attgcgataa tgatccttca aaatgcgtaa atcctgggac aaacgggctt 780
gtcaattcta aagtcgatca aaaatatgtg ttaaacaaac aagacattgt caataaattt 840
aaaaacaaag cggatcttga tgtaattgtt ttaaaggatt caggggttgt agggcttggg 900
agtgatatta ccctagcaa caatgatgat ggcaagcatt atggccagtt aggggtagta 960
gcttctgctt tagatcctaa aaaactcttt ggcgataacc ttaagactat caatttagag 1020
50 gatttaagaa ccattcttga tgaattcagc cacactaaag gctatgggca taacgggaat 1080
atgacctatc aaagagtggc ggtaacgaaa gatggtcaag tggaaaagga tagtaatggc 1140
aagccaaaag attctgatgg cctcccctat aatgtgtgtt cgctttatgg gggatccaat 1200
cagcccgctt tccctagcaa ctacccta at tccatctatc acaattgtgc ggatgtccc 1260
gtgggctttt taggggtaac agcagcggtt tggcagcagc tcatcaatca aaacgccttg 1320
55 ccgatcaact acgctaactt ggggagtc aa acaactaca acctaaacgc tagtttaaac 1380
acgcaagatt tagccaattc catgctcagc accatccaaa aaacctttgt aacttctagc 1440
gttaccaacc accatttttc aaacgcacgc caaagtttta gaagccctat tttaggggtt 1500
aacgctaaaa taggctatca aaactacttt aatgatttca taggggtggc ttattatggc 1560
atcatcaaat acaattacgc taaagctgtt aatcaaaaag tccagcaatt gagctatgg 1620
60 ggggggatag atttgttatt ggatttcac accacttact ccaataaaaa tagccctaca 1680
ggcattcaaa ccaaaaaggaa tttttcttca tcttttggtg tctttggggg gtttaagggg 1740
ttgtataaca gctattatgt gttgaacaaa gctcaaggaa gcggaattt agatgtggct 1800
accgggttga actaccgcta taagcattct aaatattctg tagggattag catcccttta 1860
atccaaagaa aagctagcgt cgtttctagc ggtggcgatt atacgaactc ttttgttttc 1920
65 aatgaagggg ctagccactt taaggtgttt ttcaattacg ggtgggtgtt ttag 1974

```

<212> Type : DNA

<211> Length : 1974  
SequenceName : SEQ ID 497  
SequenceDescription :

## 5 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

atgagtcctag	ctacgagttta	caatgtgagt	aataatTTTT	ctaagtttaa	tattaagaga	60
gtcagaggat	atttgatttg	tcttgttgt	aacacaccta	aaatgataca	aagaggattg	120
aatggtgtct	cattttatgg	ttgctctgat	tatgtaaata	aaggcgactg	taaggcgctt	180
ttacgagaaa	taaatggctc	aatgaaaatg	gtctgcttac	attgtgaaaa	cacgcccata	240
atggaaaaag	tagaaaagtg	taggggagga	gcttacgctt	gtaagaattg	caataggaag	300
ttttacttta	tcgatcttgc	aaaacaaaaac	gaacgaaaaa	aagatttaga	aaaagaaaaa	360
aaagaattgc	ttaataagat	tgaaaagcaa	aaaatcaaac	accttgagcg	tttcattttg	420
gctggtgtaa	aagctaatat	taaagaaaat	tcttttttct	taggatgtaa	aaattatcct	480
aatggcgaat	ggactgctag	tatggattca	caagatctta	aatgtcccaa	atgcaacaga	540
ttaatgaaaa	gaaaaaagaa	tttcaaaaac	aatgagtttt	ttacagctac	atcgcttacc	600
ttaaatgcaa	tagaattttg	tctctatatt	aatttgaaaa	aaaaggaaac	caatgtttag	660

<212> Type : DNA

<211> Length : 660

SequenceName : SEQ ID 498

SequenceDescription :

## 25 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

ttggaaatta	agaaatatTT	tctttacgct	ctattttttt	tgcttttttc	tggtcttttt	60
ttatccaaac	ttcaagctta	taaattcaac	atgagatttg	ttggaaaggt	gagcagctat	120
actaagtttg	gctttaacaa	ccaaagatac	cagccttcta	aagacattta	tcctacaggt	180
agttatactt	ctttactcgg	cgaattgaat	ttgagcatgg	gattatacaa	gggcttgagg	240
gcagaagtag	gggctatgat	ggcagcgctt	ccctatgact	ctaccgcta	tcaaggcaat	300
aatatcccta	atggccagcc	cggatctagg	acggatcctt	ttggggcggg	tatcttttgg	360
caatacattg	gctggtatgc	aggacatagc	ggtttaaacg	tgcaaaaacc	tcgtttggct	420
atggtgcata	acgctttttt	gagctacaac	tacaagaaag	acaaattcag	ttttggcggt	480
aaaggggggc	gctatgatgc	tgaagagtat	gattggttca	cttcttacac	tcaagggggt	540
gaaggccttg	tcaaatacaa	agacaccagg	ttaagggtga	tgtattcaga	cgtaggggct	600
tcagcgtaaa	gcgactgggt	ttgggtattt	gggcgttact	atacaagcgg	taaggctcta	660
atgattgcgg	atttgaaata	cgaaaaagac	aacctaaaaa	tcaaccctta	tttttatgct	720
atctttcaaa	gaatgtatgc	gccaggcatt	aatatcactt	acgacacca	ccctaatttc	780
aacaataagg	gctttcgttt	tgtaggcact	ttcgtggggt	ttttcccat	ttttgccact	840
cgggctaate	aaaatgat	tatcctattc	caacaagtgc	cattaggaaa	gagcgggcaa	900
acttatttct	tcgcgactcg	tttttactat	aacaagtggc	aatttggggg	tagcgtctat	960
aaaaatatcg	gtaacgctaa	tggcgatata	ggtattttatg	gcgaccctct	agggataaac	1020
atttgagcga	atagtatTTa	tgacgcagaa	attaacaata	tcgttggcgc	tgatgttatt	1080
aacgggtttt	tatatgtagg	ctcgcagtat	aggggggtta	gttggaataa	tttagggcgt	1140
tggacggata	gccccagggc	tgatgaaagg	agtctcgcg	tctttttgag	ttatttttct	1200
aataagtata	atattagaat	ggatttgaaa	ctagaatatt	atggcaatat	cacaaaaaaa	1260
ggctatttga	ttgggtattg	tggcatgtat	gttccagttg	atcctaattg	gcctggcacg	1320
caacctttta	cacacaacgt	gtattctgac	aggagccata	tcattgttta	cattacttat	1380
ggtttttaga	tttactag					1398

<212> Type : DNA

55 <211> Length : 1398

SequenceName : SEQ ID 499

SequenceDescription :

## 60 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

atgaaaaaga	caattctact	ctctctctct	ctctctctcg	cttcatcgct	cttgcatgct	60
gaagacaacg	gcttttttgt	gagcgcgggc	tatcaaatcg	gcgaagcggt	gcaaattggc	120
aaaaacaccg	gcgaattgaa	aaacttgaa	gacaaatacg	agcagttaag	ccaatcttta	180
gccccactgg	cttcgttaaa	aaaaagcatt	caaacggcga	acaacattca	ggctgtcaac	240
aatgctttta	gcgatttaaa	aagctttg	agtaacaacc	acacaaacaa	agaaacatcg	300

```
cccatctaca acaccgcgca agctgtttatc acttcagtat tggcttttttg gagtctttat 360
gcagggaacg ctctcagttt tcatgtgacc ggtttgaatg atggatctaa ttctccttta 420
ggaagaatcc atagagatgg gaactgcaca ggattacaac aatgttttat gagcaaaagaa 480
acttatgata aaatgaagac acttgccgaa aacctccaaa aagctcaagg caatctctgt 540
5 gccttatcag aatgctctag caatcaatca aatggaggca aaacttccat gactacagct 600
cttcaaacgg cgcaacagct catggactta atcgaaacaga ccaagggttc tatgggtgtg 660
aaaaatatcg tcatcgaggg tgttacaaac aaaccaatg gtgctggcgc tatcacatcc 720
actgggtcatg taaccgacta tggcgtgttt aacaacatca aggcgatgct acctatcttg 780
caacaagcgc ttacgctttt tcaaaagtaac cacaccctat ccactcagtt gcaagctcga 840
10 gctatgggat ctcaaacaaa tctgtgaattc gctaaagaca tctacgcttt agctcaaaac 900
caaaagcaaa tcttttctaa cgcttcaagt atcttcaatc tctttaattc cattcctaaa 960
gaccaactta agtatttggg gaacgcttac ttgaaagtgc cacatttggg taaaaccctc 1020
actaaccttt acagacagaa tgtgaatttg aataaagaaa ttaatgcggg tcaagacaat 1080
gtagctaatt atggtaatcg tttggattcg gctttaagcg tggctaaaga tgtttataac 1140
15 ctaaaatcca atcaaacaga gatcgtaacc acttataacg atgctaagaa tttgagcgaa 1200
gagattttcta aacttcctta taaccaagtc aatgtaacaa acatcgttat gtgcctaaa 1260
gattctacag cgggcctaata ccaaatcaac ccagagcagc aatccaatct taaccaagct 1320
ttagcggcga tgagcaataa ccccttttaa aaagtgggca tgatcagctc tcaaaacaat 1380
aacggcgctt tgaaacgggt tggcgtgcaa gtgggttata acaattctt tggcgaaagc 1440
20 aaaagatggg gggttaaggta ttatggtttc tttgattaca accacggcta tatcaaatcc 1500
agctttttta attcttcttc tgatatatgg acttgatggc gtgggagcga tttgttagtg 1560
aattttatca acgatagcat cacaagaaag aacaacaagc tttctgtggg tctttttggg 1620
ggatccaac tagcagggac tacatggcct aattctcaat acatgaattt aacagcggtc 1680
aataaccctt acagcgcgaa agtcaatgct tccaatttcc aatttttgtt caatctcggc 1740
25 ttgaggacga atctcgctac agctaagaaa aagacagcg aacgttccgc gcaacatggc 1800
ggtgaactgg gcattaaaaa ccctaccatt aacaccaatt attattcttt tctaggcact 1860
aagctagaat accgaaggct ttatagcggt tatctcaatt atgtgtttgc ttatttaa 1917
```

<212> Type : DNA

30 <211> Length : 1917

SequenceName : SEQ ID 500

SequenceDescription :

Sequence

35 -----

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

```
atgaaattaa aaaaacgaaa agttgcggct acattgctaa agcgtttgac cttgccacta 60
ttgttcaacta cgggttccatt aggggcgggtt acttatgaag tgcattgggga ttttatcaac 120
40 ttctccaaag tgggttttaa ccgttcgcct attaaccttg ttaaaggtat ctatccata 180
gaaacttttg ttaaccttac gggtaagcta gaggggtctg tgcatttagg taggggatgg 240
accgtgaatg taggcggtgt tttgggcgga caagtttatg ataacactag gtatgatagg 300
tgggcaaaag attttacccc cccaagctat tgggataaaa cttcttgcgg cactgattct 360
ttgagccttt gtatgaatgc gactaaaatg tggcaacagc aaggggcagg tggatcatt 420
45 gaccctaggg gtattggcta tatgtatag ggtgagtggg acggcttgtt ccctaattac 480
tatccggcta acgcctactt gcccgggcat tcaaggcgct atgaagttaa taaagcgaat 540
cttacctatg acagcgacag agtccatatt gtaatggggc gctttgatgt taccgagcag 600
gagcaaatgg attggattta ccaattgttc caagggtttt atgggacttt caagcttact 660
aagaacatga aattcttggc cttagctct tggggtcgtg gtatcgctga tggccaatgg 720
50 ttgttcccta tctatcgtga aaagccttgg ggtattcata aggcgggtat tatttatcgc 780
cctacaaaga atctaataat ccacccttat gtgtatctca tccaatgggt aggtacattg 840
cccgggtgcta aaatagaata cgataccaat cctgagttta gcggtagagg tataaggaat 900
aaaacgactt tctatgtgtt gtatgactat cgttgggaata acgctgaata cggccgttac 960
gcaccgcctc gttataaacac ttgggatccg ttcttggata atggtaagtg gcgtggcttg 1020
55 caaggtcctg gtggtgcgac gctctatttg caccaccaca tagacattaa caactacttt 1080
gtggttggtg gtgcttacct caacatcggt aaccctaaca tgaacttagg tacttgggg 1140
aaccctgtgg ctcttgatgg tatcgaacaa tggggtcggtg gcactctacag cttaggcttt 1200
gcggggattg acaacattac cgatgctgat gcgttcactg agtatgttaa aggtggaggt 1260
aagcatggta agttcagttg gagcgtttat cagcgcctca ctaccgcacc aagggtttg 1320
60 gaatatggta ttggtatgta tctagactat cagttcagca agcatgttaa agcgggtctc 1380
aaactcgtg gttagagtt ccaaatccgt gcgggttaca accctggaac cgggttctct 1440
gggccaacg gtcagccgct caactgaat aatgggttgt ttgaatcttc ggcgttcgcg 1500
caaggccctc aaaacatggg tggatcgca aaaagcatta ctcaagacag aagccatttg 1560
atgacacaca tcagttatat tttctaa 1587
```

65 <212> Type : DNA

<211> Length : 1587

SequenceName : SEQ ID 501

## SequenceDescription :

## Sequence

-----

```

5 <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
    atgaaaaaact tttcccccact ctattgtctt aaaaagctca aaaaacgccca tttaatcgct 60
    ctgagctctgc ccttgcttttc ttatgcgaat ggctttaaaa tccaagagca aagccttgaat 120
    ggcacggctt taggctcggc gtatgtcgc tgggctaggg gtgctgacgc ttctttttac 180
10 aaccgcgcta acatgggctt tactaacgat tggggcgaaa acagaagcga atttgaaatg 240
    accaccaccg tgatcaatat cccggccttt agctttaaag tccctacgac caatcaaggc 300
    ttatattcgg taacaagttt agaaattgat aaaagccaac aaaatatattt aggcacatc 360
    aacactatag ggtaggcaa tatccttaaa gcgcttgcca atacggccgc taccaatggc 420
    ttatccacaag ctatcaatcg tgttcaaggg ottatgaact taaccaatca aaaagtcgta- 480
15 accctcgctt caaaacctga cactcaaatc gtgaatggct ggacaggcac gactaatattt 540
    gttttaccta aattctttta taaaacgcgc acgcataacg gcttcacttt tggggggag 600
    tttaccgctc ctagtgggtt ggggtatgaaa tgggaatggta agggggggga atttttgcat 660
    gacgtgttta tcaatgatgg agagcttggc cctagcatga gttatactat taataaacgc 720
    ttttctgtgg gtgtgggttt aagggggctt tatgacgacg ggagctttaa taacaccgtt 780
20 tatgtgcctt tagaggggcg ttcagttttg agcgcggagc aaatcttaaa cttaccaaac 840
    aatgtttttg ccgatcaagt gccaaagt aac atgatgactt tattaggcaa tattggctac 900
    caaccacgcg ttaattggca aaaagcgggt ggggacatga gtgatcagag ctgtcaagag 960
    ttttacaacg gcttgaaaaa aatcatgggt tatagcgggt taatcaaaagc gagcgcgaat 1020
    ctttatggca cgactcaagt cgtgcaaaaa tctaaccggac aaggcgtatc ggggggggtat 1080
25 agagtgggtt cgagtttgcg tgtgtttgat catggcatgt tttctgtggt gtataattct 1140
    tcagttacct ttaacatgaa aggcggtttg gatggctatca cagagcttgg ccttctttta 1200
    gggagcgttt tgactaaagg cagcttgaat atcaatgttt cactcccca aactttaagc 1260
    ttagcctacg cccaccaatt ttttaaagat cgctaagggt ttgaagggtt gtttgagcgc 1320
    acttttttga gtcaaggga taaattttta gtcaccctg attttgcga cgccacttac 1380
30 aagggcttga gcgggacggg ggcttccttg gactctgaaa cgcttaaaaa aatggtaggc 1440
    cttagcgaatt taaaagcgt gatgaacatg ggggctggct ggagggacac caacaccttt 1500
    agattagggg taacttacat gggtaaaagc ttgcgtttaa tgggcgctat tgattatgat 1560
    caagcccaaa gcccacaaga cgcgataggc attccggact ctaatggcta taccgtggct 1620
    tttgggacta aatacaattt taggggcttt gatctggcg tagcggggag tttcactttt 1680
35 aagagcaacc gctccagttt gtatcaatcc ccaactattg ggcaattgag aatcttttag 1740
    gcctcttttag gctatcgctg gtaa 1764
  <212> Type : DNA
  <211> Length : 1764
    SequenceName : SEQ ID 502
    SequenceDescription :

```

## Sequence

-----

```

45 <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
    atggctttttc aggtcaatac aaatatcaat gcgatgaatg cgcattgtgca atccgcactc 60
    actcaaaaacg cacttaaaac ttcattggag cgattgagtt cagggtttaag gatcaataaaa 120
    gcggctgatg acgcacagc catgacgggtg gcgattctt tgcgttcgca agcagagcagt 180
    ttgggtcaag cgattgcaa cagaaatgac ggcatgggga ttatccaggt tgcggataag 240
50 gctatggatg agcaattaaa aatcttagac accgttaagg ttaaagcgac tcaagcggct 300
    caagatgggc aaactacgga atctcgtaaa gcgattcaat ctgacatcgt tcgtttgatt 360
    caaggttttg ataatatcgg taacacaaag acttataacg ggcaagcgtt attgtctggt 420
    caattcacta acaagaatt ccaagtagg gcttattcta accaaagcat taaggcttct 480
    atcggctcta ccacttcga taaaatcgg caggttcgta tcgctacagg cgcgttaatc 540
55 acggcttctg gggatattag cttgactttt aaacaagtgg atggcgtgaa tgatgtaact 600
    tttagagagc taaaagtttc tagtttagca ggcacaggga tggcggtgtt agcagaagtg 660
    atcaataaaa actctaaccg aacagggggt aaagcttatg cgagcgttat caccacgagc 720
    gatgtggcgg tccactcagg aagtttgagt aatttaacct taaatgggat tcatttgggt 780
    aatatcgcag atattaagaa aaacgaatca gacggaagggt tagtcgcagc gatcaatgcg 840
60 gtactttcag aaaccggtgt ggaagcttat acggatcaaa aagggcgctt gaatttgcgc 900
    agtatagatg gtcgtgggat tgaaatcaaa accgacagcg tcagtaacgg gcctagcgtt 960
    ttaacgatgg tcaatggcgg tcaggattta acaaaaggct ctactaacta cggaaggctt 1020
    tctctcacac gattagacgc taagagcatc aatgtcgttt cggcttctga ctcacagcat 1080
    ttaggcttca cggcgattgg ttttgggaa tctcaagtgg cagaaaccac ggtgaatttg 1140
65 cgcgatgtta ctgggaattt taacgcta atgtcaatcag ccagtggcgc gaactataac 1200
    gccgtgatcg ctacggta ccaaaagctt ggatctgggg ttacaacctt aagagggcgc 1260
    atgggtggtga ttgacattgc cgaatcagcg atgaaaatgt tggataaagt ccgctctgac 1320

```

```

ttaggttctg tgcaaaatca aatgattagc actgtgaata acatcagcat cactcaagtg 1380
aatgttaaag cggctgaatc tcaaatcagg gatgtggatt tcgctgaaga gagcgcgaaat 1440
ttcaacaaaa acaacatttt ggcgcaatca ggcagctatg cgatgagtca agccaatacc 1500
gttcaacaaa atatcttaag gcttttaact tag 1533
5 <212> Type : DNA
  <211> Length : 1533
    SequenceName : SEQ ID 503
    SequenceDescription :

10 Sequence
  -----
  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
15 atggcaggca caaagctat atatgaatca tcttctgcag gattcttctc gcaagtctcc, 60
   tcaatcatct caagcacaag tgggtgcgca gggccatttg caggaatagt agcgggcgct 120
   atgacagcag cgattattcc tattgttgtg ggatttacta atccgcaaat gaccgctatc 180
   atgacccaat acaatcaaag catcgctgaa gctgtaagcg tgcctatgaa agccgctaac 240
   caacaataca accaattgta tcaagggttt aacgatcaaa gcatggctgt ggggaacaat 300
   atcttaataa tcagcaaat aacaggggaa tttaacgcgc aaggcaacac gcaaagcgcg 360
20 caaattagtg ctgtcaatag tcagattgca agcattttag cgagtaacac taccctaaa 420
   aatcctagcg ctattgaagc ttatgcgacg aatcaaatcg ctgttcttag cgtgccaaca 480
   acggttgaaa tgatgagcgg tatattagcg aatattacaa gcgcagcacc aaaatacgcc 540
   ctactcttac aagagcaact gcgttctcaa gcaagcaaca gctcaatgaa tgatacagcc 600
   gattcccttg atagctgtac cgcttttagc gcacttgttg gctcatcaaa agtggttttc 660
25 agttgcatgc aaatttctat gactcctatg agtgtttcta tgcccactgt ttatgccaac 720
   taccagcggg ttgccactaa agccctaaact taaggcgtta atcctatgac cactcctgca 780
   tgccctattg gggacaaggt tcttgccggt tattgctatg ctgaaaaagt agcagaaatt 840
   ttgagagaat actatataga atttgtgaaa aacaatacca atttgttgca gaacgcttct 900
   caaatgatac ttaatcaatc aggattagct atagcacct atgacactca agcgatttct 960
30 aacataagct cgctatataa ttacaatata gtacggaata aatctttttt gaaatcgcat 1020
   ttgacttatc ttgattacat caaagacaag cttaaggggc aaaaagatag ctacttaaca 1080
   gaaaggggtg agactaaaat aatcgtgaag tga 1113
  <212> Type : DNA
  <211> Length : 1113
    SequenceName : SEQ ID 504
    SequenceDescription :

Sequence
  -----
40 <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
   atgactaacg aagccattaa ccaacaacca caaaccgaag cggcttttaa cccgcagcaa 60
   tttatcaata atcttcaagt ggcttttatt aaagttgata atgttgcgc ttcatttgat 120
   cctaatacaa aaccaatcgt tgataagaat gatagggata ataggcaagc ttttgagaaa 180
45 atctcgcagc taaggaggga attcgctaata aaagcgatca aaaatcctac caaaaagaat 240
   cagtattttt caagctttat cagtaagagc aatgatttaa tcgacaaaaga caatctcatt 300
   gatacagggt cttccataaa gagctttcag aaatttgga ctcagcggtta ccaaattttt 360
   atgaattggg tgtcccatca aaacgatccg tctaaaatca acacccaaaa aatccgaggt 420
   tttatggaaa atatcatata accccctatc tctgatgata aagagaaagc ggagtttttg 480
50 aggtctgcca aacaagcttt tgcaggaatt atcataggaa accaaatccg atcggatcaa 540
   aaattcatgg gcgtgtttga tgaatctttg aaagagaggc aagaagcaga aaaaaatgga 600
   gagcctaatt gagatcctac tgggtggggt tggcttgata tttttttatc atttgtgttt 660
   aacaaaaaac aatcttccga tctcaaagaa acgctcaatc aagaaccagt tcctcatgtc 720
   caaccagatg tagccactac caccactgac atacaaaagt taccgcctga agctagggat 780
55 ttgcttgatg aaaggggtaa tttttctaaa ttcactcttg gcgatatgaa catgttagat 840
   gttgagggag tcgctgacat tgatcctaata tacaagttca accaattatt gatccacaat 900
   aacgctctgt cttctgtgtt aatggggagt cataatggca tagaacctga aaaagtttca 960
   ttgttgatg gaacaatgg tggtcctgaa gctaggcatg attggaacgc caccgttggt 1020
   tataaaaacc aacgaggcga caatgtggct acactcatta atgtgcatat gaaaaatggc 1080
60 agtggggttag tcatagcagg tgggtgagaaa gggattaaca accctagttt ttatctctac 1140
   aaagaagacc aactcacagg ctcaacaaga gcattgagtc aagaagagat ccaaaacaaa 1200
   gtggatttca tgggaattct tgcacaaaat aatgctaata tagacaactt gagcaagaaa 1260
   gagaaagaaa aattccaaaa tgagattgaa gatttttcaa aagactctaa ggcttattta 1320
   gacgccttag ggaatgatca cattgctttt gtttctaaaa aagacaaaaa acatttagct 1380
65 ttagtgtgct agtttggtta tgggggaatt agctacactc tcaaagatta tgggaaaaaa 1440
   gcagataaag ctttagatag ggaggcaaaa accactcttc aaggtagcct aaaacatgat 1500
   ggcgtgatgt ttgttgatta ttctaatttc aaatacacca acgcctccaa gagtccctgat 1560

```

```

aagggtgtgg gtgctacgaa tggcgtttcc cattt agaag caggctttag caaggtagct 1620
gtctttaatt tgctaattt aaataatctc gctat cacta gtgtcgtaag gcaggattta 1680
gaggataaac taatcgctaa aggattgtcc ccacaagaag ctaataagct tgtcaaagat 1740
tttttgagca gcaacaaaga attgggttga aaagctttta acttcaataa agctgttagct 1800
5 gaagctaaaa acacaggcaa ctatgacgag gtgaaacaag ctcagaaaga tcttgaaaaa 1860
tctctaaaga aacgagagcg tttggagaaa gatgt agcga aaaatttggg gagcaaaagc 1920
ggcaacaaaa ataaaatgga agcaaaatct caagctaaca gccaaaaaga tgagattttt 1980
gcgttgatca ataaagaggg taatagggat gcaagagcaa tcgcttacgc tcagaatctt 2040
aaaggcatca aaaggggaatt gtctgataaa cttgaaaata tcaacaagga tttgaaagac 2100
10 ttttagtaaat cttttgatga attcaaaaat ggcaaaaata aggatttcag caaggcagaa 2160
gaaacactaa aagcccttaa aggctcgggt aaagatttag gtatcaatcc agaatggatt 2220
tcaaaagttg aaaacottaa tgcagctttg aatgaattca aaaatggcaa aaataaggat 2280
ttcagcaagg taacgcaagc cttaaacgac cttgaaaatt ccattaaaga tgtgatcatc 2340
aatcaaaaga taacggataa agttgataat gctaatcaag cgggtatcagt ggctaaagca 2400
15 acgggtgatt tcagtggggg agagcaagcg ttagccgac tcaaaaattt ctcaaaggag 2460
caattggctc aacaagctca aaaaaatgaa gattt caata ctggaaaaaa ttctgcacta 2520
taccatccg ttaagaatgg tgtaaacgga accctagtcg gtaatgggtt atctaaagca 2580
gaagccacaa ctctttctaa aaacttttcg gacat caaga aagagttgaa tgcaaaactt 2640
20 ggaaatttca ataacaataa caataatgga ctgaaaaaca gcacagaacc catttatact 2700
caagttgcta aaaaggtaaa agcaaaaatt gaccgactcg atcaaatagc aagtgggtttg 2760
gggtgatgtg ggcagcagc gagcttcctt ttgaaaaggc atgataaagt tgatgatctc 2820
agtaaggtag ggctttcagc taacctgaa cccatttacc ctacgattga tgatctcggc 2880
ggacctttcc ctttgaaaag gcatgataaa gttgatgatc tcagtaagggt agggctttca 2940
agggagcaaa aattgactca gaaaattgac aatct caacc aggcggtatc agaagctaaa 3000
25 gcaagtccatt ttgacaacct agatcaaatg atagacaagc tcaaagattc tacaaaaaag 3060
aatgttgtga atctatatgt tgaaagtgc aaaaaagtgc ctactagttt gtcagcgaaa 3120
ttggacaatt acgctactaa cagccacaca cgcatttaata gcaatgtcaa aaatggaaca 3180
atcaatgaaa aagcgaccgg catgctaacy caaaaaaatt ctgagtggtc caagctcgtg 3240
aatgataaga tagttgcgca taatgtggga agtgctcctt tgtcagcgta tgataaaatt 3300
30 ggattcaacc aaaagaatat gaaagattat tctgtatcgt tcaagttttc caccaggttg 3360
agcaatgccg taaaagacat taagtctggc tttgtgcaat ttttaaccaa tatattttct 3420
atgggatcct acagcttgat gaaagcaagt gtggaacatg gagtcaaaaa tactaataca 3480
aaaggtgggt tccaaaaatc ttaa 3504

```

<212> Type : DNA

35 <211> Length : 3504

SequenceName : SEQ ID 505

SequenceDescription :

Sequence

40 -----

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

```

atgaaaacaa atgggtcattt taaggatttt gcatggaaaa aatgcttttt aggcgcgagc 60
gtgggtggctt tattagtggg gtgtagcccg catattattt aaaccaatga agttgctttg 120
45 aaattgaatt accatccagc tagcgagaaa gttcaagcgt tagatgaaaa gattttactt 180
ttaaggccag ctttccaata cagcgataat attgctaaag agtatgaaaa caaattcaag 240
aatcaaacca cgcttaaagt tgaagagatc ttgcaaaatc agggctataa ggttattaat 300
gtggatagca gcgataaaga cgatttttct tttgcgcaaa aaaaagaagg gtatttggct 360
gtcgctatga atggcgaaat tgttttacgc cccgatccta aaaggaccat acagaaaaaa 420
50 tcagaaccgg ggttattatt ctccactggg ttggataaaa tggaaggggg tttaatcccg 480
gctgggtttg tcaaggttac catactagag cctatgagtg gggaatcttt ggattctttt 540
acgatggatt tgagcgagtt ggacatccaa gaaaaattct taaaaaccac ccattcaagc 600
catagcggag gggttagttg cactatgggt aaggggacgg ataattctaa tgacgcaatt 660
aagagcgctt tgaataagat ttttgcaagt atcatgcaag aaatggataa gaaactcact 720
55 caaaggaatt tagaatctta tcaaaaagac gccagggaat taaaaaacia gagaaaccga 780
taa 783

```

<212> Type : DNA

<211> Length : 783

SequenceName : SEQ ID 506

60 SequenceDescription :

Sequence

-----

<213> OrganismName : Mycoplasma pneumoniae

65 <400> PreSequenceString :

```

atgaaatcga agctaaagtt aaaacgttat ttactgtttt taccactttt accgctaggg 60
acgttgtcac tagccaacac ctacctctc caagaccaca acacctcac cccctacagc 120

```



	ccctttacga	caccgctcaa	tggggggctg	gatgtcgtgc	gcgcgcgcca	tttacacccc	180
	tcatacgaac	tcgtggactg	aaagcgggtg	ggggatacca	agttgggtggc	gctgggtccgc	240
	tcagcgtttg	tcaggggtgaa	attccaggac	acaacgagtt	cggatcaaaag	taataccaac	300
	caaaatgcct	tgagttttga	tacccaagaa	tcacagaagg	cacttaattgg	ctcgcagagt	360
5	ggatccttctg	acacttccgg	gtctaactcc	caagacttcg	ccagctatgt	cctcatcttt	420
	aaagccgcgc	ccagggccac	gtgggtgttt	gaacgcaaga	ttaagttggc	ggtgccttac	480
	gttaagcagg	aaagtcaggg	ttccggcgat	caaggttcca	atggttaagg	ctccctctac	540
	aaaacccctcc	aagacctcct	cgtcgaacaa	cccgtgaccc	cttacacccc	gaatgcgggg	600
	ttagcccggtg	tgaatggggg	tgctcaggat	acggttcatt	ttggttcggg	tcaagaatcg	660
10	agttggaatt	cccaacgttc	ccaaaaaggc	cttaaaaaaca	accccgacc	caaagccgtc	720
	accggctttta	agctcgataa	gggccgcgcg	taccgggaagc	tgaatgaaag	ttgaccgggtg	780
	tatgaacccc	tggattcgac	caaggagggg	aagggggaagg	atgagagctc	ttggaaaaat	840
	tcggaaaaaaa	caacagcgga	aaatgatgcc	ccgttgggtg	ggatgggttgg	aagtgggtgcg	900
	gctgggaagt	cttctagtgt	acaaggcaat	ggctcgaaaca	gttcgggggtt	aaaatcgctc	960
15	ttgagatcag	cacctgtcag	gttccacca	agcagtacaa	gtaatcaaac	tttaagctta	1020
	tcataaccccg	ctcctgtggg	cccacaagcg	ggtgtaaagcc	aaccgcgggg	gggtgctacg	1080
	gcagcagtg	ccgttcacgc	cacagcgagt	gacagcccca	cctttagcaa	gtacctcaac	1140
	accgcccagg	ccttgccaca	gatgggggtg	attgttcggg	gggtggaaaa	atgaggtggg	1200
	aacaacggta	cggtgtgtagt	ggctagccga	caggatgcta	cttccactaa	cctgccccat	1260
20	gcggcagggtg	cttcccaaac	gggtttggga	actggttcgc	cccgcgaacc	agctttaacc	1320
	gcacggtcac	agcgtcccg	cacgggtggt	gtcgaaacc	ttcgtgcggg	caatagcagt	1380
	gaaactgatg	ccctaccgaa	tgtcatcacc	cagctctatc	atacttcaac	cgcccaactc	1440
	gcttacttta	atggccagat	cgttgtgatg	ggttccgacc	gggtaccgag	tctttgggtat	1500
	tgagttgtcg	gggaggacca	ggaatcgggc	aaagcgacct	gatgagcgaa	aaccgagctc	1560
25	aaactggggca	ccgacaagca	gaagcagttt	gtcgaaacc	agttgggggtt	taaagatgac	1620
	tcaaatccg	attccaaaa	ttcgaatttg	aaggcccaag	gcctcaccca	acccgcctac	1680
	ctcatcgccg	gtcttgacgt	tgtggccgac	cacctcgtct	ttgcggcctt	taaagcgggc	1740
	gcggtgggggt	atgatatgac	gactgattcg	agcgcttcga	cctacaacca	agcactcgcc	1800
	tggtcgacca	cggccgggtt	ggacagtgat	ggggggtaca	aggccttggt	ggaaaaacag	1860
30	gccgggctca	acggcccgat	taatggcttg	tttaccctgc	tcgacacctt	tgcgtatgtg	1920
	acccccgtga	gtgggatgaa	aggggggagt	cagaataatg	aagaagtgca	aacgacttac	1980
	ccggtcaagt	ccgaccaaaa	ggccaccgcc	aaaattgcct	ccttaattaa	tgccagccca	2040
	ctcaacagtt	atgggggatga	tgggttgacc	gtgtttgatg	cctggggcct	taactttaac	2100
	tttaagtga	acgaggagcg	cttgccatcg	cgcaccgacc	aactgcttgt	gtatgggatt	2160
35	gtaaacgaaa	gtgaactgaa	gtccgcacgg	gaaaatgccc	agtcgacctc	cgatgataat	2220
	tcaaacacca	aagtcaagt	aaccaacacc	gcctcgcaat	acctccccgt	gccgtattac	2280
	tacagtggcca	atttcccgga	agcgggtaac	agaaggcgag	cggagcagcg	gaatgggggtg	2340
	aagattagca	ccttggaatc	gcaagccact	gatggctttg	ccaactcggt	acttaacttt	2400
	ggtaccgggtc	ttaaagccgg	tgttgaccca	gctccagtag	cacgggggtca	taaaccgaac	2460
40	tatagtgcag	tactactagt	gcgtgggtggc	ggtgtaaagg	ttaaacttta	ccccgatact	2520
	gataaactgt	tggattctac	tgacaaaaac	agtgaacctg	tctccttctc	ctatacccca	2580
	tttggggtctg	ctgaaagtgc	cgtagacctc	accacgttga	aggatgtgac	ctatatgtgt	2640
	gaaagtgggtc	tgtgggttcta	tacctttgac	aatggtgaaa	aaccaacgta	cgatggtaaa	2700
	caacaacagg	tcaaaaaccg	caagggttat	gctgtgatta	ccgtatcacg	taccggaatt	2760
45	gaattttaacg	aggacgctaa	taccacaacc	ttaagccaag	ccccagctgc	tttggctgtc	2820
	caaaaacggga	ttgcttccag	tcaggacgac	ctcacaggca	tcctaccgtt	atccgatgag	2880
	ttctccgctg	tgattaccaa	ggatcaaaaca	tggaccggta	agggtgatat	ctataagaac	2940
	accaacgggt	tgtttgaaaa	ggatgatcag	ctatcggaac	acgtgaagag	gogtgacaac	3000
	ggtttgggtcc	ctattttacaa	cgaagggtatc	gtcgataattt	ggggcagagt	ggattttgct	3060
50	gccaacagtg	tttttgcaagc	gcgtaacctc	actgataaaa	cggttgatga	ggtgatcaat	3120
	aaccccgata	tcttccaaag	cttctttaag	tttaccocag	cctttgataa	ccaaagagca	3180
	atgctagtgg	gggaaaagac	atcggtatact	accttaacgg	ttaaaccgaa	gattgagtac	3240
	ttggatggta	acttctatgg	tgaggattcc	aagattgctg	gaattccgct	caacattgat	3300
	ttcccttccc	ggatttttgc	tggctttgct	gctttacgct	cctgggtcat	tccggtatca	3360
55	gtcggttcat	cggtgggcat	tctcttaatc	ctgctcatct	taggccttgg	tattggaatt	3420
	ccaatgtata	aggtccgcaa	gcttcaagac	tccagctttg	ttgatgtgtt	taaaaagggtg	3480
	gatacgttga	caaccgctgt	gggtagcgtg	tacaagaaga	ttatcaccga	aacgagtgtg	3540
	atcaaaaaaag	ctcctagtgc	ggtgaaagct	gctaataacg	ctgctcctaa	agcaccagtt	3600
60	aaaccagctg	ctccaacagc	tccaagacca	ccagtccaac	cacctaaaaa	ggcttaa	3657

<212> Type : DNA  
 <211> Length : 3657  
 SequenceName : SEQ ID 507  
 SequenceDescription :

Sequence  
 -----

```

<213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
5  atgcaccaaa ccaaaaaaac tgccttgtcc aagtccactt ggattctcat cctcaccgcc 60
   accgctcccc tcgcgacggg actcaccgta gtgggacact tcacaagtac caccacgacg 120
   ctcaagcgcc agcaatttag ctacaccgcg cctgacgagg tcgcgctgcg ccacaccaat 180
   gccatcaacc cgcgtttaac cccgtgaacg tatcgtaaca cgagcttttc ctccctcccc 240
   ctcacgggtg aaaatcccg ggcgtgggccc ttagtgcgcg acaacagcgc taagggcac 300
   actgcccggca gtggcagtc acaaacacg tatgatccca cccgaaccga agcggctttg 360
   accgcatcaa ccacctttgc gttacgcggg tatgacctcg ccgggcgcgc cttatacgac 420
10  ctcgattttt cgaagttaaa cccgcaaacg cccacgcgcg accaaaccgg gcagatcacc 480
   ttttaaccct ttggcggcct tgggttgagt ggggctgcac cccaacagt aaacgaggtc 540
   aaaaacaagg tccccgcga ggtggcgcaa gaccctcca atccctaccg gtttgccgtt 600
   ttactcgtgc cgcgcagcgt ggtgtactat gagcagtgc aaaggggggtt gggcttacca 660
   cagcagcgaa ccgagtgagg tcaaaatact tccaccacgg ggcgaatgtt tggcttgaag 720
15  gtgaagaacg ccgagggcga caccgcgaag agcaatgaaa aactccaggg cgctgagggc 780
   actggttctt caaccacatc tggatctggc caatccaccc aacgtggggg ttcgtcaggg 840
   gacaccaaag tcaaggcttt aaaaatagag gtgaaaaaga aatcggactc ggaggacaat 900
   ggtcagctgc agttaaaaa aaatgatctc gccaaacgtc ccattaagcg gagcgaggag 960
   tcgggtcagt ccgtccaact caaggcggac gattttggta ctgccctttc cagttcggga 1020
20  tcaggcggca actccaatcc cggttccccc acccctgaa ggccgtgggt tgcgactgag 1080
   caaattcaca aggacctccc caaatgatcc gcctcgatcc tgattctgta cgtatgcct 1140
   tatgcgcgca accgtaccgc cattgacgcg gttgatcact tggatcccaa ggccatgacc 1200
   gcgaactatc cgcccagttg aagaacgccc aagtgaacc accacgggtt gtgggactga 1260
   aaggcgcgcg atgttttgc tccaaaccac ggggtcttca acccgcgcgc ccaccccgag 1320
25  tggtttgatg gcgggcagac ggtcgcggat aacgaaaaga ccgggtttga tgtggataac 1380
   tctgaaaaca ccaagcaggg ctttcaaaag gaagctgact ccgacaagtc ggccccgatc 1440
   gccctccggt ttgaagcgta cttcgccaac attggcaacc tcacctgggt cgggcaagcg 1500
   ctttttggtg ttggtggcaa tggccatggt accaagtgcg cccacaccgc gcctttgagt 1560
   ataggtgtct ttagggtgac ctataatgca actggtacca gtgctactgt aactggttga 1620
30  ccatagtcct tactgttctc aggcattgtc aacaaacaaa ctgacgggtt aaaggatcta 1680
   ccctttaaca ataaccgctg gtttgaatat gtaccacgga tggcagttgc tggcgctaag 1740
   ttctgttgta gggaaactcg tttagcgggt accattacca tgggtgatac cgctaccgta 1800
   cctcgcttac tgtacgatga acttgaaagc aactgaaact tagtagcgca aggccaaagt 1860
   cttttacgcg aagacttgca actcttcaca ccctacggat gagccaatcg tccggattta 1920
35  ccaatcgggg cttgaagtag tagtagtagt agtagtcaca acgcacccta ctacttccac 1980
   aataaccocg attgacaaga ccgtccaact caaatgtgg ttgatgcctt tattaagccc 2040
   tgagaggaca agaacggtaa ggatgatgcc caactggtcc aataagctca ctgaccaacc attaatgtct 2100
   atgtgagctt gacaggtata caactggtcc aactccttgt ttgctgctat tctcaatccg 2220
   gactttgtca atgagaatgc ttaccaacca aactccttgt ttgctgctat tctcaatccg 2220
40  gaattgttag cagctcttcc cgacaagggt aaatacggta aggaaaacga gtttgtgtct 2280
   aacgagtaac agcgttttaa ccagaagtta acggtagctc ctaccaagg aacaaactga 2340
   tcccacttct ccccacgctt ttcccggttc tccaccgggt tcaaccttgt ggggtcgggtg 2400
   ctgaccaggg tgttggtgta tgtgccctgg attgggaatg ggtacaggta tggcaataac 2460
   caccggggcg tggatgatat aaccgcgcct caaacagcg cggggtcgct cagcgggaatt 2520
45  agtacgaaca caagtgggtc gcgttcttct ccccgcagct tttccaacat cggcgtcgcc 2580
   ctcaaacgca atgtccaagc caccctcggg ggcagtcaga cgatgattac aggcgggttcg 2640
   cctcgaagaa ccctcgacca agccaacctc cagctctgaa cgggggcggg gtgaagggaat 2700
   gataaggctt caagtggaca aagtgcgcaa aaccacacca agttcacgag cgctacgggg 2760
   atggaccagc agggacaatc aggtacctcc gcgggggaat cgcactcgtt aaagcaggat 2820
50  aatattagta agagtgggga tagtttaacc acgcaggacg gcaatgcgat cgatcaacaa 2880
   gaggccacca actacaccaa cctccccccc aacctcacc ccaccgctga ttgaccgaac 2940
   gcgtgtcat tcaccaacaa gaacaacgcg cagcgcgcgc agctcttctt ccgcggcttg 3000
   ttgggcagca tcccgggtgt ggtgaatcta caccgactta cattcggaac aaaccaaaact gaacctcccc 3120
   accgacaaaa aatggtocta caccgactta cattcggaac aaaccaaaact gaacctcccc 3120
55  gcttacggtg aggtgaatgg gttgttgaat ccggcggttg tggaaaccta ttttgggaac 3180
   acgcgagcgg gtggttcggg gtccaacacg accagttcac ccggtatcgg ttttaaaatt 3240
   cccgaacaaa ataattgatt caaagccacc ctgatcacc ccgggttggc ttgaacgccc 3300
   caggacgtcg gtaacctcgt tgtcagtggc accacgggtg gcttccagct cggcgggttg 3360
   ctggtcacct tcacggactt tgtcaaaccc cgcgcgggtt acctcggtct ccagttaacg 3420
60  ggcttgatg caagtgatgc gacgcagcgc gccctcattt gggccccccg gccctgagcg 3480
   gcctttcgtg gcagttgggt caaccgggtg ggcgcggtg agagtgtgtg ggatttgaag 3540
   ggggtgtggg cggatcaagc tcagtcgac tcgcaaggat ctaccacac cgcaacaagg 3600
   aacgccttac cggagcacc gaatgctttg gcctttcagg tgagtgtggt ggaagcgagt 3660
   gcttacaagc caaacacgag ctccggccaa acccaatcca ctaacagttc cccctacctg 3720
65  cacttggtga agcctaagaa agttacccaa tccgacaagt tagacgacga tcttaaaac 3780
   ctggttgacc ccaaccaggt tcgcaccaag ctcgcgcaaa gctttggtac agaccattcc 3840
   acccagcccc agccccaatc gctcaaaaca acgacaccgg tatttgggac gagtagtggt 3900

```

```

aacctcagta gtgtgcttag tgggtgggggt gctggagggg gttcttcagg ctcagggtcaa 3960
tctggcgtgg atctctcccc cgttgaaaaa gtgagtgggt ggcttgtggg gcagttacca 4020
agcacgagtg acggaaacac ctctccacc aacaacctcg cgctaatac taatacgggg 4080
aatgatgtgg tgggggttgg tgcactttct gaaagcaacg ccgcaaagat gaatgacgat 4140
5 gttgatggta ttgtacgcac cccactcgct gaactgttag atggggaagg acaaacagct 4200
gacactggtc cacaaagcgt gaagttcaag tctcctgacc aaattgactt caaccgcttg 4260
tttaccacc cagtcaccga tctgtttgat ccggttaacta tgttgggtgt tgaccagtac 4320
ataccgctgt ttattgatat cccagcaagt gtgaacccta aaatgggtcg tttaaagggtc 4380
ttgagctttt acaccaacga acagagctta ggtctccgct tagagttctt taaacctgat 4440
10 caagataccc aaccaaaca caacgttcag gtcaatccga ataacggtga cttcttacca 4500
ctgttaacgg cctccagtc aaggtcccaa accttgttta gtccgtttta ccagtgaact 4560
gattacgtgt tgccgttagc gatcactgta cctattgttg tgattgtgct cagtgttacc 4620
ttaggacttt ccattggaat ccgaatgcac aagaacaaac aggccttgaa ggctgggttt 4680
gcgctatcaa accaaaagg tgaatgtgtt accaaagcgg ttggtagtgt ctttaaggaa 4740
15 atcattaacc gcacaggtat cagtcaagcg ccaaaacgct tgaacaaaac cagtgcgggt 4800
aaaccaggag caccgccccc accagtacca ccaaagccag gggctcctaa gccaccagtg 4860
caacpaccta aaaaacccgc ttag

```

<212> Type : DNA

<211> Length : 4884

20 SequenceName : SEQ ID 508  
SequenceDescription :

Sequence

```

25 <213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
atgggttata agttaaacg atgaccttta gttgcgttta catttaccgg aattggccta 60
gggggtgggc tagcggcgctg ttctgcactc aatacctcca atctgtttcc ccgtcaaaac 120
cgctccaagc agttgattgg gtttacccga aacaacatca ttaaacctga agctgtacta 180
30 aaagccgctt tagctgagga caatggtacg gaaaccattt taagggttaa ctttgggtgaa 240
gcgttaaaga gttggtacca aaacaataag gatcgcaaca ttgtaccgg ttttaactatc 300
tttagtgaaa acgtggagga tgaacatgat aaactgttgg accaaaaaca acaggccgaa 360
ccgattaatt gaccaataga gctccaaaag gaatccgacc agtggggtgg gagtgaaagt 420
tcctgaaagg ccttaaagtt atacgaccgt ttaatagccg acttccaatc acttatcttt 480
35 agcaacattg ttgctaattg gcagttgact gatggtagtg atcagtttaa acccactacc 540
aaagataacc tcgacagtac tagcaaaaa atcaagtttg ttaattccaa accaaatgat 600
cctaagcggg agttctttgc taacctccag gattctctat ttgccagtg agtagtgag 660
gaaaaacccc tccccctcac ccaagccttc ttgcgtacc aagcaccaca ggacgggctc 720
gacagcttat acgaccaagc cgcgattggg agtgccttac agttgggcta tgccttcccc 780
40 gcgtttcgcg agcccaataa tggacaaaag caaggtaaaa ccaccttcga cccaccccc 840
aacacgagtt aaaacttcgg ggatttcatt aagcggtgtt ttccggagca gaagaatggt 900
caaaccacac aatccaatac atcctccgcg accgggttgt ttgactggca aaccaagtga 960
aacaccaatg gcgctgcaa taagctcttg gtgaccaagt ccaacctgcg cggggccttt 1020
aagggcgctg ggttagctac ggccattatt gaccagtacg agtacctggt ggggtggaag 1080
45 aaaacgagtt cgttgcccga ggtcaaggtg gttcgaata agtccaacca aaatccgctg 1140
gatagttttt ttatggaggg gaaggatgag gtggcgatta gatccatagt ttgcgctgag 1200
aaaattgccg tgaccgacca aacccccggg tttaagggtc acccggcggt tgtcaagggt 1260
aagcagagtc agcagaacga taccttttac caaaaccagc gcaaaactgag cggcggggcaa 1320
agtggggata ataactccca gggtaaacac cactacctcc aagacgcggg gcggttgacg 1380
50 agtagtcaag caatggcgcc agcttctact ggggcagatt ctagtagtgg taccaatggt 1440
ggtggtagct ccggggggcaa ctctgtttta attccgctcc caaggagtgc cgcccttacc 1500
cacaccagc aacaagttca acaaacacc tccacactcc aaaccctgt ttacgcccgt 1560
ggtgacgatg gtacatacgc cctggcaatt gacggtgggt attattttt ggcgaaacac 1620
55 aaacgcgatt tcaccaaaca agccgacatc ttgctgtacc gctatttaca agctaagagt 1680
aataacttta aggaaaacgg cgtcgagttt agtttgaact tactggaatc tggcagcctg 1740
ttccaaacgt gagcacaac ggggttaacc gcgaagttgt acggtgctt ggtggcgatg 1800
atgggttcgg gtcaggggac ccaagtttaag gacagtgtgc aggggagtag ccgagcagct 1860
tctgttagcg ttcaaacac ccagcaaaac agacagcaat cgactgatac ccaagaatcg 1920
60 gaagtgggta agttagccaa gtccctgctg aaatcaagtg cggatttgcc caaaccttc 1980
actgataacc caacctttta aaaggcctta accgacatcc aatccagtag caaggattat 2040
ttggctgctg cggggaagtt aagtgaagtt tgggggaggt gagtggctta 2100
cagcaagcta ttattgaccg cgctgataag tacattcaac tagaaaaaca agcccaaaag 2160
agtgcgattg gcttgggcca accgctccct taccacgcg ctagttagtg tagttacccc 2220
65 gcttttagaga agttctttat tccggaagat agtgacagc atggaaaaat aaaagcatct 2280
gaatcaggat ctgcgcgttt agtaacacta aagacaacag atagtcaaaa aagcacaaac 2340
accgttaaac aacgggacat caaaccgacc cgggaaaaca acgacaaaaa gttaaagcag 2400
ttaactagtg atgtagaac taaagcatct agtttaatca ccaaatgagg tgcaacaccc 2460

```

```

    caaattggta gtcagttctc cgaattgttt tgcgtcaaga gtaaggacaa taagccccag 2520
    accaaccatga tcttggcctt attgtctgat gttgggatta agtgaaccaa gattctcaat 2580
    tcctttaagg agtgggtctt tactaatacc aacgacttta agaacaatta cgattctgaa 2640
    aagaaagaac ttaaaaggcaa tgagtacaag gactttaacg acctcgttaa acaaaccttg 2700
5   tacttacggt cctgacaacg actcacttcc aaggaaaagt ttgggtatta caaggagtgt 2760
    ggtagtgtaa aagcacaagc agctcaatca ggaatgggtt cactttcaag tagcgagca 2820
    gttgcaaagt ctgtagcttc aagtggcatg caaaaatctg gtgatcaaac cctcttgga 2880
    ctcggtaaaa aagcggttga aagtgaactg gaagcatcta gtagtgatgg gcagtacaa 2940
    tacttgcgct tcttgtccac cttaatgtga ctagttaagg atggggcgaa gaactataa 3000
10  cgcttgctcc aacaagcgat taccgtgggt acccgtgcct ttgtgtcgtg aacggtgagc 3060
    tatgatgata cggctacggc atcagcagcc gcagcaaaag cgcaagtagc agtattaaag 3120
    acagctcagg caacaataac tcaaagcgac aacccttcca ataagtttgt ccaaaacccc 3180
    gattatgttc tgggttcgga aaccaactga tttaacgata agagtacgcc aattaaaccc 3240
    gattcggttac tggaaagcga aagcacttac aactttaccg cggaaccggt tgatgataag 3300
15  acgaaaagtc aaaagagggt tactgggtgt accactaacg aaaaacactt ctttggcttt 3360
    aacggtttaa cgattaaact gcccacaaat gtgtcgactg ctagtgcggg actcacgga 3420
    caaatcttta acaactttgg tcagtttagt acaaatccgg ggccttgagc 3480
    cagtacaagg ataaagcaac cctgaaacgc ttaatccaaa acactaattc cgatgccgag 3540
    ctcaatgctt ttggtgaagt gttgcacggt gcagttaatg tcgataccag taacttagga 3600
20  cgtttttaact ccagtgggga accggttgatt agctttgaca acaagaagaa gttcttggtt 3660
    gatgtagtgg acaacttgga tgatgtttac tttacaagt tcgaagggtt tgttggccaa 3720
    accaagggtg agatgtctga ttcaagtagt agttcccaag gtacgaagac tataagaaa 3780
    ccaaagccgc accactcacc aaggactcga gtgtcaagac tttgagctat gtcattcaga 3840
    ttaccaacga ggacgttaac aaaatttctg ctagtgtaaa aactgataag aacagtgttt 3900
25  tag
    <212> Type : DNA
    <211> Length : 3903
        SequenceName : SEQ ID 509
        SequenceDescription :
30  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
35  atgaaaaaac ttctaataaa accccagttt tgattottaa cccttgggtg ctttatctct 60
    tcaagtgtta ttttagttgc ctgtgctacc ctttccaatt cagcactcca aactgttttt 120
    aaagcacgtt cgaaccagtt cttcaacggg gaacagggtg gtttacaaaa cgcttttagc 180
    actgctttaa aagatccaga ggccaacaaa cagtttgctg ctgctccctt tttaaaggca 240
    ttgacagctt ggtatgaaaa taaccaagac aaacagggtc ccagttctt taaagacacc 300
40  aaaaagagtg ttgatgagca atacaaccaa gccgtagata aggtgggtat ggctagccga 360
    aacaaaaacc tctttgtcca acaagacttg ctggatagcg ccgggggggt tagaaacttg 420
    aaaagcccag aagttgtttg aacagctcat taa
    <212> Type : DNA
    <211> Length : 453
45  SequenceName : SEQ ID 510
    SequenceDescription :
    Sequence
    -----
50  <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
    atgcaacagc aaggagaaac taaagatcaa tataacactt ttggcctgag acttgtgctg 60
    aacagtgttg gcgtatcagt tttaggactt gatgggtttt ttaaattcat aaaaggcggg 120
    agcggagggt gcaatggcgg ttctagtagt gccaaaaaga ttgataaaga agagcaaaag 180
55  aaattcttaa agttccgtgc ttttcaagcc aaaattggca cattttataa cactaacttt 240
    gccttttagt ttcccctaaa cgaaacttta aaaggttggg ttgacaaaca ccgcggtatt 300
    atcttagcga acgccttagt taaagttact ttagacacaa aggaaaaagc aagtaaggcc 360
    ttagtgatg cttttagttc ttataaaaaa tgattgagtg aatacacccc gggtgggttt 420
    gctaccacca tgattagctt ttattttgac caaatgaaag ctctcaacaa taagctgtta 480
60  gaacgagtag ggagcttaaa ccaaaatggt aaccaagcca atoctacccc ttgggttaaat 540
    ggggttatcg ctaaaactac ttacgttaac caaagttttg tgacctagg tgggcactga ggatactaat 600
    tactttacct ttttaattac caaagttttg tgacctagg tgggcactga ggatactaat 660
    gtcagtgaag aaaaaagcaa actcaaaact aaaactgaag atgttaacaa gattagggaa 720
    aagattttga acaacatcga cagtaagctc aaaacttttg tccaaaaaact caaacctacc 780
65  ttagcacccc gaccagctta cagtaacgta atcttggtta acattaacaa tgataagggt 840
    tggctctgtg gcgtctaattg aagtttggca gttttactag atccgaaaaa gggttaacccg 900
    ctttcgttta tgttgctcaa acaaatgttt gatcaaaaca gtttggttta aaaagcaaaag 960

```

```

    actttattcg aaaacattca aaataaagca aaaactagtg gaagtggtaa aagtgggtaca 1020
    accaccaacg atgatgccga tgcttttgagc aaagtccattg gcaactatta ctacaa.cact 1080
    tgagctaagc taaccgataa atcaattttat ggcaacctta aggatgacaa atttga.tgat 1140
    ctcttttaaat tggctttttga cagtagtatt aacgaaaagt cctttaatgt agatta.taag 1200
5   gcagtgattg aacactaccg ctttatctat accttagagt ggttggtaga caaaaa.ccta 1260
    aagaacttca aggattttatt aaaggcaaac ctcaagtttg gtgaaattgc ttttat.tgct 1320
    tacaagaata ctgaaacgca gaactttctct aaccgcgaag gtatatctcg tttcta.cttt 1380
    aattacgaaa acgaaacgaa tgcgggctaag agtgctacgc aaattataga ccccaa.cagt 1440
    ttctttctata aaaccaccac taaaccagaa gcgaaaacca ctcaaagtgc taatac.agct 1500
10  gtgatggttc gaaatagcga gatgaacaat cagcaaaacta acagttatgg ctttac.tggt 1560
    ttgagtacca gtagtgggtc gatgttaggt gctgctaccc agcaagccat tttgga.tcaa 1620
    ataaccaaaa cttccttgca acagtatggt tctcaagctg acctgaaaaa gatcat.tggc 1680
    gaaactaaaa atcaattatt attagaccga attgccaacc aactaatagc cttaaa.accg 1740
    aatacaagtg gcaacagtgg tacccaaaaa caacttgctg catacttcca aacaga.tgcg 1800
15  gttggcaatc ctacttttga ctttaaagcg aagcaaaaac tcttatttga tgtttt.agat 1860
    caatacaaaag atttcttttg taataatgca caagcagttc aaagagattc tggtaa.gagt 1920
    ggaactggca cctattttaac ctataccgac ggtagtata agatcactta tttgca.gttt 1980
    tcctataaaag atattgacgg ttttaagttg agtagttcaa acggaactag cagcaa.attt 2040
    gccagtgatg ttgtagcagc gctttttatta ttccaggcag cctataaaagg tactca.aaaa 2100
20  ctggccttaa gttccatcaa taaaccacaa ttaccaattg gcgataaacg cataaaa.aaca 2160
    gggatcgatt tactgaaata g

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2181

SequenceName : SEQ ID 511

25 SequenceDescription :

Sequence

-----

```

    <213> OrganismName : Mycoplasma pneumoniae
30  <400> PreSequenceString :
    atgaagagtt ttttaagaaa acccaagttt tgactttttat tgttgggtgg ccttttc.cact 60
    agtagtatta ttctcagtcg ctgtgcaaca ccttcaaact cagcactgca agcagt.tttt 120
    aaaccaactt ccaaccaatt ttttaacggt gagcatggta ccattcaaaag cgcttt.aaac 180
    accgcttttaa gagatccgga aactaaca aaatttgtag ctgctccact tttaaa.agca 240
35  ttagaagctt ggtacgagaa taatcaagat aaaaacatta ctcaattctt aaaaga.cacc 300
    aagactaatg ttgataacca atacaaaacc gttgtagata aagtagtttc agcacc.acgc 360
    aataaatctt tatttgtaca acaagattta ttggacagta gcggtggtag tgaggc.cact 420
    tgaaaagcgc gcaaaactgtt tgaacagcta attagtattt ttgcttcacg agtttt.tcaa 480
    aagaattatt tgtcttataa ggaaaatggc aaagtatcag ccggtccggt tttata.cgac 540
40  acgatttcaa aaaatagtaa ttgacagaat atagtttttg atgctgttaa ttttcc.agaa 600
    actaatgatg attttttcgc gaagattcaa agcgaagttt ttgatcaatg ggctga.gtac 660
    accgatccaa ctattattag ctcagttacc ttaaagtatt cagctcctaa tttaa 714

```

&lt;212&gt; Type : DNA

45 &lt;211&gt; Length : 714

SequenceName : SEQ ID 512

SequenceDescription :

Sequence

-----

```

    <213> OrganismName : Mycoplasma pneumoniae
50  <400> PreSequenceString :
    atgattaact tcttgtttaa ccaaatgaac gcgttgaaca ataagttttt ggagcgc.cgtc 60
    aaagcattaa accaaaaatgt gaatcaggcc aatccctacac cttgggttaaa tggttt.atca 120
55  gctaaattgc cttatgtagg aacaaatggg aattacgaaa aactcaacaa ttactt.cact 180
    ttcttaattg ttaatacat gtggaagaag gtcggtaatg aagacgcttc attatc.taaa 240
    gatagtagca ttaacaagct caaaactaag accgaagacg ttaacaaaat tagaga.taaa 300
    atcttagaag acattcaaaa gaaggttcaa gaatttgtaa aaaacaagct taaacca.aacc 360
    ttagcaccac gacaaactta cagtaatgta attttgttaa acgttaacaa cgataa.gggt 420
60  tgatcgatgg gcgcgaattg agcttttagct aaacttattgg atacgagcaa aattaa.tcca 480
    ctttcattta tgttgctcaa acaaacggtt gacaaaaacg acttgtttaa gaaagc.taag 540
    aaactttttg aagatattca aagtaaaaaca aatgggtggaa gttcagggtg gatgca.agg 600
    agcaatacct cgagttagta aggagctgat gccttgagta aagtaattgg caacta.ttac 660
    tacaacagtt gagctaaatt gactgataaa tccatttatg gaaatcctaa ggacaa.caaa 720
65  tttgatgact tattttaaatt agcttttgaa gatagtatta acgaaaagtc ctttaa.tggt 780
    gattacaagc cggctattga acactaccgc tttatctata ccttggaaat actagt.taac 840
    ggtaacttaa agaactttta ggacttatta aaagcaaatt taaagtttgg tgaaat.tgct 900

```

	ttcattgctt	ataaaaaaac	tgaacacaaa	gaattttcca	atccgcaagg	tgtatttggg	960
	tctgctttta	attacgaaaa	cgaaactaat	gaagttaaga	ttgctgcgca	aaacttagac	1020
	ccaaataatt	tctttttata	aacaactacc	aaaccagaag	aagttaaaac	cgcacaaaat	1080
5	gggtgcaagca	tgtatgggtat	gcaacaaaaa	atgcaaagta	ccatgcaaga	tagtaatcat	1140
	tatgggtttta	ccgggctaaa	caccagtact	agttcaatgt	taggtgccgc	tacgcagcaa	1200
	gccatttttg	atcaataaac	caagaattcc	ttgcaacaat	atgggttcgca	gcaagaaactg	1260
	aaaactttga	ttgaaaagac	taataaccaa	ctttttattag	accgaatcgc	tagtcaatta	1320
	agtggattaa	atccttcaac	cactggaaat	agtaataatg	gaaagggtaa	aaatattgct	1380
	acttattttc	aattagatgc	cattggcaac	ccaaccctta	gctttcaaca	aaaacgaaaa	1440
10	ctttttattag	atgtttttaga	tcagtacaaa	gatttctttg	gtacaaatac	tcaggctgca	1500
	caaagagatt	ctggtaaagg	tggacatgga	agctattcaa	cttaccaaga	tggcagtgac	1560
	aagatcactt	accttcagtt	ctcctataaa	gatatagata	acttaagttt	gagtgataaa	1620
	ggaaatagta	agcttgctag	cgatgttgtg	gtatgccttt	tacttttcca	agcagcggat	1680
	aaaggtagcc	aacaattagc	cttgagtgtc	attaattaa			1719
15	<212> Type : DNA						
	<211> Length : 1719						
	SequenceName : SEQ ID 513						
	SequenceDescription :						
20	Sequence						
	-----						
	<213> OrganismName : Mycoplasma pneumoniae						
	<400> PreSequenceString :						
	atgaaaaagt	ttctaagaaa	accccaattt	tgactcttaa	cattaggcgg	ttttctgtct	60
25	actagtgtta	ttttgctgct	tgtgtctacc	ccttccaact	cggtctttaca	aaccgttttt	120
	aaagcgcgtt	ccagtcagtt	tttcaatggt	gaacagggtta	gtttacaaag	tgccctaaca	180
	acggctttta	aaaatccagt	ggccaacaaa	caatttatcg	ctgcaccact	tttaaaagca	240
	ctagaagctt	ggtacgaaaa	caacgaagac	aaaaagatta	cccagttttt	aaaagacact	300
	aagtccaatg	ttgacagtca	gtacacaacg	gcagtcgata	aagtggatc	agcatcacgc	360
30	aataaatcac	tttttgtgca	acaagatttg	ttggataacg	ccggtggtag	tgaagcaacc	420
	tggaaagcgc	aaaagctgct	tgaacagctc	attagtgtact	ttgctagtgc	ggttttccaa	480
	aagaactacc	tcaattacaa	aaaagatgga	caagtttcta	ctgggtccatt	tacttatgat	540
	gaactacaca	aggaagaaaag	ctgaaaaaac	tttgaattta	gtgccccacg	ttttagttaa	600
	actaatgatg	actttttcgc	caaaattcaa	agccaagtat	ttgaccaatg	gggtggagtac	660
35	actgatccca	cttttaattag	tcaagttaac	tataagtatt	ctgctcccag	tcaagggtta	720
	ggtcagatct	ataacagaga	gaagttaaag	gataaactaa	caccttctta	tgcttttctt	780
	ttctttgccc	aagaaaaaga	cattgcaccc	aacaaaacg	ttggtaataa	gcgctgaag	840
	cagttagtta	aaggtgaggg	cgctattact	gataataata	tcggtcaaag	cggtacaaac	900
	agccaaaaaa	ctggtctgct	caaataccgt	aatgaatcaa	ataagggtga	ttttcttgat	960
40	tttcctctaa	atttatcaga	tactaacgaa	acgaagcaat	tagtagacgc	ttctaacatt	1020
	gtcgatcagt	gtgcctttca	taacttaggt	gatcaaaaca	gttacagtcc	cattaaattc	1080
	gagcaagata	atgacgaatt	gccgcaaat	aaggagctca	aagaagacct	taacaacacg	1140
	attgttgtcg	ataaaaagtaa	ggacgtagaa	aaagcttcca	aaactaacgc	actgttttac	1200
	aatgatcaag	aaggttaagca	acaacaaagt	gactcagatc	caattgtctg	cgcttttagat	1260
45	gacatttttg	gtgcttttca	aagcgaaggc	gactcaattta	gtaagttagc	ggagcaggtta	1320
	aagaaagcag	ctgcaacaaa	aatggaagcg	aaaacagctg	ttttaagaac	taacaattct	1380
	aagggccaac	aaaacaatta	cgttgtttta	gatgcagcta	ttcctacatt	taattcaaca	1440
	acatcaaaa	cgaaaaataa	tagcgcttct	aatgaagttt	tagttgcctt	aaaatctgga	1500
	tctataaatt	taaggcaggt	tcagcaaaact	gatcaaaaca	gttacagtcc	cattaaattc	1560
50	cggattgtgc	gtaacagcac	cggagtaact	gttttcggcc	ttgatggtgg	gagctattat	1620
	ttaaaacaag	attcaacaaa	taaaaaatca	gtttctaaag	aaagtttaac	cttattaact	1680
	aaatctagtt	caggtaacag	taataaagta	ttaagagacc	ttgacaagca	aaaacaattc	1740
	ttaaagtttc	gtgcctttca	agctaaaact	aacactttct	acagtactaa	ctttgccttt	1800
	agttttccct	taaacgaaac	gctaaaaagt	tggtttgata	aacaccggga	actaattttg	1860
55	gccaacgcct	tagttaacgc	tagtcttgac	caaaaggata	aagctagcaa	agctttaact	1920
	gaagctttta	atccttataa	agagtttaatt	aaagaatttg	cgccggtggc	tttagcaacc	1980
	acaatgatca	gctttttatt	tgatcaaagt	aaagcgctca	ataacaagtt	gctagagcgc	2040
	gcccgtaatc	ttaacaaaaa	cgtcaaccaa	gccaatccaa	ccccttggtt	gaacggtttg	2100
	tcagccaagt	taccttacgt	taataactaac	ggtaattacg	aaaagttaaa	caactacttt	2160
60	accttcttaa	tcacaaaaac	attgtgacct	aaagttggtc	aagaagaaac	aagcataagt	2220
	gaagaaagca	ataaagctca	aactaaaact	gctgactgtg	acaagattag	ggacaaaatc	2280
	ttggaaaaca	tcacaaactaa	agtaaatgat	tttgtaaaaa	acaaactcaa	acctgcttta	2340
	gcaccccgac	cagcttacag	taacgtcatt	ttgttaaacg	ttaacaatga	caaagtaact	2400
	tctagtgggt	ctaactggag	cttagctagc	ttattacaga	gcgacaaagt	caaccgcctt	2460
65	tcgtttatgt	gtctcaaaaca	agcgttcgat	aataacgatt	tatttaagaa	agcacaaaag	2520
	ttgtttaaag	acattcagga	aaagtcacgt	aataatgggtg	gaatgcaaag	tagttccaca	2580
	accaacagtg	atgccgatgc	attaagtaaa	gttatcggta	actattacta	cactacttgg	2640

	gctaaactca	cggacaaatc	gatttacggt	aacccgaagg	acaacaagtt	tgatgagctt	2700
	ttcaaaactgg	cttttgaagc	tagcatcgac	gaaaagtcct	ttaacgttga	ttacaaaagcg	2760
	gtcattgacc	attaccgttt	tatctatacc	ttacagtggc	tagtggacca	aaaatttaaag	2820
	aacttttaagt	cactgtttaa	aacaaacctt	aagtttgggtg	aagttgcttt	tatagcttac	2880
5	aagaacactg	aaaccactaa	cttctctaata	cccccaaggcg	tatttgggttc	ctacttcaac	2940
	atgagaacct	ccgctagcga	agttaaagaa	tccactcaaa	cactagatcc	caataaacttc	3000
	ttttacaaaa	caacaaccaa	gccaacggta	caagccattc	aacaagttgc	tagcttagca	3060
	ttagtacaaa	aacaacaaat	gcaacaaaat	tcaactgatc	actatgggtt	tactgggtttg	3120
	agtaccagca	ctagttcgat	gttcgatgct	agttcccggtg	atgccatttt	gcagcaaatt	3180
10	acgaaaacct	ccttgcaaca	gtacgggttc	agccaatcaac	tcaaaaagat	cattcaagggtg	3240
	actaataacc	aattgttact	agaccggatt	gcagtcaggt	taagtggatt	aaatccttcc	3300
	acaactaatg	gtggcagtggt	caaaacaatt	gcgacctact	tccaagtggga	tgccgttggc	3360
	aacccaactt	tggacttcca	agctaagcgt	aaactgttat	tagacctctt	ggaccagtac	3420
	caaaactact	ttggtaatgg	tgcccaaaag	atcccaagggtg	attctactcc	aagtgggaact	3480
15	ggcaactacc	tcactttacca	aaatggtagt	gacaagtaca	cctacacca	gttcacttac	3540
	caagacattg	acagcttgag	tctaacaact	acaagcggta	ccaacaataa	aattggcagt	3600
	gatgttggtg	cagcgctgct	tttattccaa	gcagcagaca	agggcacaca	acagttggca	3660
	cttagtgcca	ttaatagcc	gcagttaaat	attgggtgata	aacggataga	aagtgggtta	3720
	aaattgctca	aatag					3735
20	<212> Type : DNA						
	<211> Length : 3735						
	SequenceName : SEQ ID 514						
	SequenceDescription :						
25	Sequence						
	-----						
	<213> OrganismName : Mycoplasma pneumoniae						
	<400> PreSequenceString :						
	atggttgga	gtggtgcggc	tgaagtgtct	tctagtttac	aaggcaatgg	ctcgaacagt	60
30	tcgggggttaa	aatcgctctt	gagatcagca	cctgtcagtg	ttccaccaag	cagtacaagt	120
	aatcaaaactt	taagcttatc	taaccccgct	cctgtaggcc	cacaagcggg	tgtaagccaa	180
	cccgcggggg	gtgctacggc	agcagtgctc	gtcaatcgca	cagcgagtga	caccgccacc	240
	tttagcaagt	acctcaacac	cgcccaggcc	ttgcaccaga	tgggggtgat	tgttcggggg	300
	ttggaaaaat	gagggtggtaa	caacggtagc	gggtgtagtg	ctagccgacg	ggatgctact	360
35	tccactaaacc	tgcccacatg	ggcaggtgct	tcccaaaccg	gtttgggaac	tggttcgccc	420
	cgcgaaaccag	ctttaaccgc	aacgtcacag	cgtgcccgtc	cgggtgggtgc	tggccccctt	480
	cgtgcgggca	atagcagtg	aactgatgcc	ctaccgaatg	tcacacca	gctctatcat	540
	acttcaaccg	cccaactcgc	ttacttaaat	ggccagatcg	ttgtgatgag	ttccgcccgg	600
	gtaccgagtc	tttggtattg	agttgtcggg	gaggaccagg	aatcgggcaa	agcgacctga	660
40	tgagcgaaaa	ccgagctcaa	ctgggggcacc	gacaagcaga	agcagtttgt	cgaaaaccag	720
	ttgggggttta	aagatgactc	aaattcggat	tccaaaaatt	cgaatttgaa	gacccaaggc	780
	ctcacccaac	ccgctacact	catcgccggg	cttgacgttg	tggccgacca	cctcgctctt	840
	gcggcattta	aagcgggcgc	ggtggggtat	gatatgacga	ctgattcgaa	cgcttcgacc	900
	tacaaccaag	cactcgtctg	gtcgaccacg	gccgggttgg	acagtgatgg	ggggacaagg	960
45	ctttggtag						969
	<212> Type : DNA						
	<211> Length : 969						
	SequenceName : SEQ ID 515						
	SequenceDescription :						
50	Sequence						
	-----						
	<213> OrganismName : Mycoplasma pneumoniae						
	<400> PreSequenceString :						
55	atgccagttt	ttctaaaatt	aacgcacaca	attagaaaag	tgctaagagt	tgcaagactt	60
	tctagactag	cattactatc	actaacgcgt	gttattttta	gcgggttggtc	caatattaat	120
	ttaattagtg	ctggttggtc	ttcttcggta	caaccgttgt	taagcaaact	cagttcgac	180
	tatgtcttga	accacaatga	caaggataac	cttgtagaaa	ttagtgtcca	agcgggtggc	240
	tctagtgtctg	gggtgaaagc	aatcaccaag	ggactagctg	acattggtaa	tgtctcgaaa	300
60	aacaccaaga	gctatgctga	ggaaaaacaag	cagttgtgga	tggacaaaaa	gctcaaaaaca	360
	attacacttg	gcaaaagatgc	cattgctgtt	atttataaag	caccatcaga	gtttaagggc	420
	aaactagttc	tcactaaaga	caacctcaac	gatcttttacg	atctgttcgc	tggtagcaaa	480
	agcgttgaca	ttaataagtt	tgtcgaaaac	ggacaaacca	ctaaaaacag	taatcataat	540
	ttgataggct	tcccccgtag	tggggggcgt	tttgcttctg	gtaccgctga	agctttcctt	600
65	aagttttcgg	gtcttacaca	gacaaaaaact	ttagataaag	attccaaaga	aatttttgga	660
	gggtcaagca	actatggccc	caatgcgcga	ccaactagtg	aaaccaacat	tgaggccttt	720
	aatacctttg	tcacaacttt	gcgacaaccc	aatttatatc	gcatgggtga	cctcagttta	780

ggggtttgtga ataacaacat gaacctaatt aagagtgaag gttttgaggt tttaaaagtc 840  
 aaatatgata ataacgcagt taccctctcc agtcaagcag tttctagcaa cacttacaaa 900  
 tgggtacgcc cgttgaactc agtggtttcc ctgttaccaa aacaaaaaac actgccaagt 960  
 atccaacgct tttttaactg attgttattt agcaacaaca gtgaaattaa gaaaatatac 1020  
 5 gatgactttg gtgtgttaga gttaacggct gacgaaaaga aaaagatgtt taaaacaggt 1080  
 aatgcagaaa tgagcaacat tgccaacttc tgggttgatg attacagtct gaacaaccaa 1140  
 accttcggtg cactctag 1158  
 <212> Type : DNA  
 <211> Length : 1158  
 10 SequenceName : SEQ ID 516  
 SequenceDescription :  
 Sequence  
 -----  
 15 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :  
 atgagcttcg cgggtgctgcc cccggagatc aattcggcgc gcctgtacgt ggggtgccggg 60  
 ttggcgccga tgctggagcg ggccgcccgt tgggatggac tggccgacga attggggttcg 120  
 gccgcggcct cgttttcggc ggtgacggcg gggctggcag gttcctcgtg gctgggcgcg 180  
 20 gcgtcgacgg cgatgacggg agcggccgcc cctatctgg gctggttgag cgcggcgccg 240  
 gcgcaggccc agcaggcgcc caccaaaacc cggctggcgg cggccgcctt cgaggcagcc 300  
 ctggcgccga cggtagatcc ggcatcacc tccgccaacc gggcactgtt cgtgtcgctg 360  
 gtggtctcga acctgctggg ccaaaacgcc cggcgatcg cggccaccga ggccgcctac 420  
 gagcagatgt gggcccagga cgtggcgggc atgtttggct accatgccgg ggcttcggcg 480  
 25 gccgtctcgg cgttgacacc gttcggccag gcgctgccga ccgtggcggg cggcgggtgcg 540  
 ctggctcagcg cggccgcggc tcaggtgacc acgcggtctc tccgcaacct gggcttgccg 600  
 aacgtcggcg agggcaacgt cggcaacggc aatgtcggga acttcaatct cggctcggcc 660  
 aacatcggga acggcaacat cggcagcgcc aacatcggca gctccaacat cgggtttggc 720  
 aacgtgggtc ctgggttgac cgcagcgctg aacaacatcg gtttcggcaa caccggcagc 780  
 30 aacaacatcg gggttgccaa caccggcagc aacaacatcg gcttcggcaa taccggagac 840  
 ggcaaccgag gtatcgggct caccgggtagc ggtttgttgg ggttcggcgg cctgaactcg 900  
 ggcaaccgga acatcggctc gttcaactcg ggcaccggaa acgtcggcat cggcaactcg 960  
 gttaccggga actggggcat tggcaactcg ggcacacagc acaacaccgg ttttggaac 1020  
 tccggcgacg cgaacacggc cttcttcaac acgcggaatg ccaacaccgg cgtcggcaac 1080  
 35 gccggcaact acaacaccgg tagctacaac cccgggaaca gcaataccgg cggcttcaac 1140  
 atgggccagt acaacaccgg ctactgaac agcggcaact acaacaccgg ctgggcaaac 1200  
 tccggcaatg tcaacaccgg cgccttcatt actggcaact tcaacaacgg cttcttgttg 1260  
 cgcggcgacc tcaacggcct gattttcggg agcccggtct tcttcaactc gaccagtgcg 1320  
 ccgtcgtcgg gattcttcaa cagcgggtgc ggtagcgcgt ccggcttctc gaactccggt 1380  
 40 gccacaatt ctggcttctt caactcttcg tccggggcca tcggttaact cggcctggga 1440  
 aacgcggggc tgctggtatc gggcggtgat aactcgggca acaccgtatc ggggtttgtc 1500  
 aacatgagcg tgggtggcat caacacggcg gcttgatct cgggcttctt caacaccgga 1560  
 agcaacatgt cgggattttt cgggtggcca cccggtcttca atctcggcct ggcaaacggg 1620  
 ggcgctgtag acattctcgg caacggcaac atcgggaatt acaacattct cggcagcgga 1680  
 45 aacgtcgggt acttcaacat ccttggcagc ggcaacctcg gcagccaaaa catcttgggc 1740  
 agcggcaacg tcggcagctt caatatcggc agtggaatac tcggagtatt caatgtcgg 1800  
 tccggaagcc tgggaaacta caacatcgga tccggaaacc tcgggatcta caacatcggt 1860  
 tttggaaacg tcggcgacta caacgtcggc ttcgggaacg cgggcgactt caaccaaggc 1920  
 tttggcaaca cgggcaacaa caacatcggg ttcggcaaca cgggcaaca caacatcggc 1980  
 50 atcgggctgt cggcgacaaa ccagcagggc ttcgaatatt ctacgggctg gaactcgggc 2040  
 accggcaaca cgggcctgtt caattcgggc accaataacg ttggcatctt caacgcgggc 2100  
 accggaaacg tcggcatcgc aaactcgggc accgggaact ggggtatcgg gaaccgggt 2160  
 accgacaata cgggcctcct caatgctggc agctacaaca cgggcctcct caacgcggc 2220  
 gacttcaaca cgggcttcta caacacgggc agctacaaca cgggcggctt caacgtcgg 2280  
 55 aacaccaaca cgggcaactt caacgtgggt gacaccaata cgggcagcta taaccgggt 2340  
 gacaccaaca cgggcttctt caatccgggc aacgtcaata cgggcgcttt cgacacgggc 2400  
 gacttcaaca atggcttctt ggtggcgggc gataaccagg gccagattgc catcgatctc 2460  
 tccgtcacca ctccattcat cccataaac gagcagatgg tcattgacgt acacaacgta 2520  
 atgaccttcg cgggcaacat gatcacggtc accgagggct cgaccgtttt ccccaaacc 2580  
 60 tctatcttga cgggtttgtt cttcttcggc ccggtcaatc tcagcgcatc caccgtgacc 2640  
 gttccgacga tcacctcac catcggcgga cccgaggtga ccgtcccatc cagcattgtc 2700  
 ggtgctctgg agagccgcac gattaccttc ctcaagatcg atccggcgcc gggcatcgga 2760  
 aattcgacca ccaaccctc gtccggcttc tcaactcgg gcaccgggtg cacatctggc 2820  
 ttccaaaacg tcggcgcgcg cagttcaggc gtctggaaca gtggtttgag cagcgcgata 2880  
 65 ggggaattcg gtttccagaa cctcggctcg ctgcagtcag gctgggcgaa cctgggcaac 2940  
 tccgtatcgg gctttttcaa caccagtacg gtgaacctct ccacgcggc caatgtctcg 3000  
 ggctgaaca acatcggcac caacctgtcc ggcgtgttcc gcggtccgac cgggacgatc 3060



	ttcaacgcgg	gccttgccaa	cctggggccag	ttgaacatcg	gcagcgcaaa	tctcggcgac	3120
	ttcaacctgg	gcagcgga	cgctggcagc	ttcaacgtct	tctcgggaaa	ccaggggtca	3180
	tacaatatcg	gtccggcgaa	cctgggtaac	tacaacatcg	gtttcgcgaa	cctgggtaac	3240
	tacaacatcg	gcttcggc	cgccggcgat	ttcaaccaag	gctttgcca	caccggcaac	3300
5	aacaacatcg	gatttgccaa	caccggcaac	aacaacatcg	gcacggggt	gtccggcgac	3360
	aaccagcagg	gcttcaattt	tgctggcg	tggaactcag	gcacggcgaa	catcggttg	3420
	ttcaactccg	gcaccaacaa	cgctggcatc	ggcaactcgg	gcacggcgaa	ctgggggtatc	3480
	ggcaactccg	gcagcgga	caccggcatc	ggcaacacgg	gcagcactaa	cacgggcttc	3540
10	ttcaacaccg	gcacgtc	caccgggtgc	gccaacgcgg	gcagctacaa	caccgggttg	3600
	tacaacaccg	gcgacaccaa	caccgggcac	gccaacctgg	gcgacttcaa	cacgggcttc	3660
	tacaacaccg	gcaatttcag	tacgggcttt	gccaaccagg	gtgatatcgc	caccgggggt	3720
	ttcatcaccg	gcgacatggg	caacggcgcc	ttctggcg	gcgaccagca	gggcctattc	3780
	agcgggggt	ctcgggtcca	tggtcccgaa	ataccgcac	acgtcaccgt	ggaagtccc	3840
	gtcaacatcc	ccatcaccgc	cagcttccac	aacaccgtct	acagcgggat	aacgcttgag	3900
15	caaatacaact	tcggtttcac	catcgacatc	gcagggatcc	ccctgctggc	cggtgcaatc	3960
	agcaaggccg	ttctcccgcc	catcaccggg	accgggtccc	cgatcacggg	caacatcggc	4020
	gaccactggc	gttcgacgc	gatcaggatc	ccggccaccg	caagcgtcgg	tcccttcgat	4080
	gtcacgttcg	tcaactatgc	ggctaccacg	ggctttttca	acgccaaccac	cgatccgtcc	4140
20	tcggggtctt	tcaacggcg	ccccggaaac	gtatcgggca	tcgccaacat	cggcgccaac	4200
	atttccgggt	tccagaacgt	cgcgaaactc	gcgacctcgg	gcttcaacaa	ctacgggtcg	4260
	ctgcaatcgg	gactggcgaa	cctgggcgat	accgtctcgg	gcgtattcaa	caccggcatc	4320
	ggggcaccgg	ccaacgtctc	gggcgatgttc	aactcgggca	gcaacctcgc	gggggtcttc	4380
	cacgaccagg	cgaccgggat	gtcgatgttc	aacctcggcc	tggaacacat	cggccaattc	4440
	aacgtcgggt	tctccaacgt	aggcgacagc	aacgcgggt	tggcgaacat	cggcagcttc	4500
25	aacctcggca	cggcgcaacct	cggcagcttc	aacgtcttcg	gcggaaccaa	gggctcatat	4560
	aacatcggcc	cggcgcaacct	gggtaactac	aacatcggcc	taggcaacct	gggcagctac	4620
	aacttcggat	tcggcaacgc	cggcgacttc	aacctcgggt	tcgccaacac	cggcaacaac	4680
	aacatcgggt	tcgccaacac	cggcaacaac	aacatcgggt	tcggcctgtc	cggcgacaac	4740
	cagcagggt	tcaattttgc	cgggtgggtg	aactcgggca	gcggcaacag	cggcctgttc	4800
30	aactcgggca	ccaacaacat	cgggtttgtc	aactcgggca	cgggcaacat	cggcatcggc	4860
	aactcgggca	cgggaaactg	gggcacgcgc	aacaccgggt	acaccaacac	cggcatcttc	4920
	aacaccggcg	acgtcaacac	cggcttgcgc	aacgcgggca	acgtcaacac	cggcatcttc	4980
	aacaccggcc	attacaacac	cggcagcttc	aacgcgggca	gcttcaacac	ggccgggttc	5040
	aaccggggt	gctacaacac	gggttatattg	acacacggca	gctacaacac	cggactggcc	5100
35	aactcgggcg	atgtcaacac	cggcggttcc	atcaccggca	attacagcaa	cgggttctgg	5160
	tgggcgggcg	attaccaagg	cctggcgggg	atcagccaaa	cgatcacctg	gcccagacac	5220
	gccgttcggg	tgaaactgca	cgtgcccgat	ttcctcgata	tcccgggtc	cggcacactt	5280
	ggcacgttca	ccgttcatgg	cttcagatcc	ccggagatca	cggcgatata	cttcttgatc	5340
	ggcataccgt	tcaatgcgcg	cacactcgat	gcattcagtt	tcccgaacat	ctcgattgtc	5400
40	cttcccaata	tcggcatcaa	cctgggtagc	gggcgggacc	cgctgatcga	tatcgccggc	5460
	accggcggtc	tattccgat	caagattcca	ctcatcgata	taccggcggc	cccgggattc	5520
	gggaaactcga	cgaccacccc	gtcgtcggga	ttcttcaacg	cgggtaccgg	taccgtgtcg	5580
	ggcggttgga	acgtgggcag	caatagttcc	ggcttcttca	acctcacctc	tggaagctcg	5640
	ggaatctcgg	gcgtccagaa	cttcggcgag	ctgatctccg	gcgggttcaa	cttcgggtaac	5700
45	actgtctcgg	gccttggtcaa	tgcgagcacg	cttgggcttt	cgatgcgggc	caatctctcc	5760
	ggcgagggga	atgtcgggtc	tacgggtcgc	ggcttcgtca	acaacaccca	gatcctcaac	5820
	ctcggggttg	gcaacgtagg	cagcgggaat	gtcggccacg	gcaatatcgg	cgactccaac	5880
	gtcgggcctc	gaaacctcgg	caacgcgaac	gtcggccatg	gcaacatcgg	cagcttcaac	5940
50	gtcttctcgg	gaaacggggg	ctcatacaat	atcggcccg	cgaacctggg	taactacaac	6000
	atcgggcctag	gaaacctggg	cagctacaac	ttcggattcg	gcaacgcggg	cgatttcaac	6060
	ctgggcttcg	ccaacagcgg	cagcaacaac	atcgggtttg	ccaacaccgg	caacaacaac	6120
	atcgggtatc	ggctgtccgg	ccacaatcaa	caggggttcg	gctcctggaa	ctcgggtacc	6180
	gccaacaccc	gcttgttcaa	ctcgggcacc	aacaacatcg	gtttgttcaa	ctcgggcacc	6240
55	ggaaacatcg	gcatctggca	ctcgggcacc	ggaacacaccg	ggatcggcaa	cccgggtgtc	6300
	ggcaacaccg	gcttggggaa	ctcgggcacc	ggcaactggg	gcctgtggaa	cccaggcacc	6360
	ggcaatatgg	gcgtcgccaa	cgtgggcacc	tacaacaccg	gtgggtacaa	cgtgggcagg	6420
	accaacaccg	gcactgc	cgtgggcacc	gccaacaccg	gcagctacaa	caccggcagg	6480
	accaacaccg	gcagcttcaa	cgacggcgac	gcttctacaa	gcttctacaa	caccggcgac	6540
60	tacaacaccg	gcttctacaa	caccggcgac	gtgaacaccg	gcgccttcat	cgggggcaac	6600
	ttcagcaacg	gcgccttctg	gcagagcgat	caccaaggcc	agtggggcgc	acactacgca	6660
	atcactgttc	cccagatccc	gctactgaac	tttagcctca	acattccggg	caacatcccc	6720
	atccatctcg	acttcgggtc	ccttgccgtc	tcgggcttcc	agattccggc	tatcaccttc	6780
	cgcgcctcgc	gggtcaccca	cttcagcgtc	ggacccatca	tcggtccgag	gatcgccggc	6840
	accttaccgg	tgatcgatat	caacatcggc	gaccccgccg	gttcatcctc	gatacccatc	6900
65	acgatcacc	gcggcgccgg	ccgggtcgtc	atcccgctac	tggaacatccc	gcccggcccc	6960
	ggtttcggaa	actcgaccac	cggccctcca	tcgggcttct	tcaactccgg	caccggcagg	7020
	tcgtctggat	tcggaaacgt	ggcgcccaac	aattcggggt	tctggaacac	cgttctcgcc	7080

```

5  ggcataggaa actctggcctt gcagaacttc ggctcgctgc aatccggctg ggcgaaacttg 7140
   ggcaaacaccg tctcggggctt ctacaacacc agtcgggcgg acttcgggac gccggctaac 7200
   ctctcggggac tctccaacgt cggcgccgac ctgaccggcg tgctccggcg cccgaacggg 7260
   tcgaccttca acgcgggcct ggcaaacctc ggccaattca acgtgggcag tgcaaacctc 7320
   ggcaagtcaa acctcggcag tgcaaacctc ggcaagtcaa acctcggcaa ttcaaacgtc 7380
   ggcttcggca acattggcaa cgcgaacatc ggcgggcgcaa acatcggcga ctttaacgtc 7440
   gggatcgcaa acaccggctc ggggctaacg gggctgtca acaacatcgg tatcggaac 7500
   accggcaact acaacatcgg tgctcggaac accggttaact acaacatcgg cttcggaac 7560
   accggcaaca acaacatcgg catcggcctg tccggcgaca accagatcgg gttcggcctg 7620
10 ctgaacggcg gcattcgcaa catgggcctg ttcaacctgg gcgacaacaa ctttggcatg 7680
   gccaacggcg gcaacttcaa ccagggcatt gccaacaccg gcaacaacaa catcggttg 7740
   ttcaaacaccg gcaacaacaa cgtcggcatc tggctgaccg gcgacggctt gtccggcttc 7800
   agctccctga actcgggcgc cggcaacacc ggtttcttca actcgggcac cgccaacacc 7860
   ggcttgttca actcgggcac cggcaacacc ggtttgttca actcgggcac cggcaacgtc 7920
15 ggcatcggca acatgggcac cggcggttc ggcgtcggcc tatccggcga cagccaggtg 7980
   ggcatcggcg gcaccaactc gggcagtttc aacatcggct tgtttaactc gggcaccggc 8040
   aatgtcggca tcggcaactc gggcaccggc aacgtcggca tcggcaacac cggcaccggc 8100
   aacaccggca tcggaaacag cggcaactac aacaccggct tgctcaacgc gggcctggtc 8160
   aacaccggca tcggcaaccc gggcaaccac aacaccggcc tgttcaacat cggcaccttc 8220
20 aacaccggca tcggcaaccc gggccactac aacaccggct cctacaacac cgttagctac 8280
   aacaccggca tggcaaacgc cggagactac ggcaccggcg cgttcacac cggcagcatg 8340
   aacaacggct tgcctggcg cgcgaccgg cagggcctgc tggcgccaa ctacaccatc 8400
   accatcgagc gacctgccgc gttcctcaat gtcgacatcc cggtaacat ccccatcacc 8460
   ggcgacatca ccaatgtctc catcccccgc attacgttcc ccagaatcga cggcagcgga 8520
25 agcgtcgaca taggcacct cagtgaccac gtcctggccc cggtcggtcc gatcacctg 8580
   catggcgggg acgtcggcg cccgctggac aaccccatcg aaattgactt cggccctcgc 8640
   cggcgatca acctcaacat cggcaagccc gacggctcca ccgtgatcaa catcgtgggc 8700
   ggcgcggcg cggcccgat cagcattccg atcatcgact tgcggccagc gcccggttc 8760
   ttcaacggca ccaccggccc gtcgtcgggc ttctcaactc ggggtgctgg cagcgcacgc 8820
30 ggcttgctga actcgggcaa caactcgggc ctctacaact tcgccactag cagcatggga 8880
   aattcgggct tccaaaacta tgggtcgctg cagtcgggct gggcgaaattt gggcaacagc 8940
   atctcgggca tctacaacac cggcttgga gcaccggcaa atgtctcggg cttgctcaac 9000
   atcggcacca acctggctgg gtggttgca aacggcccga ccgagacgac cttcagcgtg 9060
   ggcttgccca acctcgggtt ctggaatctg ggtagcgcaa acatcggcaa ctacaacctg 9120
35 ggcagcgcca acatcggcgt ctacaacctg ggcagcgcca acatcggcga cttcaacctg 9180
   ggcagcgcca acatcggcga cttcaacctg ggcagcgcca acatcggcag ctccaacatc 9240
   ggggtcggga acgtcggctc ggggctgacg ggcggccatcg gcaacatcgg cttcggcaac 9300
   accggaacac gaaacatcgg catcggaatc accggcaccg gcaacatcgg cttcggcaac 9360
   accggaacac gaaacatcgg catcgggctg accggcgaca ccatgaccgg gttcggcggc 9420
40 tggaaactcg gcaccggcaa catcgggcta ttcaactccg gcaccggcaa catcggttc 9480
   ggcaactcgg gcaccggcaa ctggggcatc ggaaactccg gtgactacaa caccggcatc 9540
   ggcaacaccg gcagcaccaa ctccggcttc ttcaacaccg gcttggtcaa caccggcatt 9600
   ggcaactcgg gtgactacaa caccggccta ttcaacccg ggaacaccaa caccggcagc 9660
   ttcaaccccg gcgactacaa caccggcggc ttcaaccccg gtaactacaa caccggctac 9720
45 ttcaaccccg gcaactcaa caccggcatc gccaactccg gcgatgtcaa caccggcgcc 9780
   ttcaattcgg gcaactacag caacggcttc ttctggcggg gcgactacaa gggcctaggc 9840
   ggtttcgcct accagagcgc cgtttccgaa atcccgtgga gctacgacag gttccaacat 9900
   tga 9903

```

<212> Type : DNA

<211> Length : 9903

SequenceName : SEQ ID 517

SequenceDescription :

Sequence

-----

<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

```

55 atgaacctgg tctccacaac gtcgggaatg tcgggcttcc tcaacgtcgg cgcgctggga 60
   tcgggtgtgg cgaatgtggg caacaccatc tcgggtatct acaacgtggg cagctcggac 120
60 ctctcgacgc ccgccggtta ctccgggttg gcaaatatcg gaaccaatat tgccggcctg 180
   ctgcgcgacg gcgcgggtac tgccggtatt aacttgggct tggccaacca cggcaacctc 240
   aacgtcgggt tcgcaagtct cggcggtttt aacttcggcg gcgccaccat cggccacaac 300
   aacgtcggga tcgggaacac cgggaatctt gatgtcggcc tggcgaacct gggcagctac 360
   aacatcgggt tcggaaacct tggcgacgac aactcgggct tcggcaactt cggcagctac 420
65 aacatcgggt tcggcaacgt cggcaacgac aatctgggtt tcgctaacgc gggcgggcgc 480
   aacatcgggt ttgcgaacac cggcagcaac aatgtcggct ttgggaacac gggcagcaac 540
   aatgtcggga tcggggtcac gggcaacgga cagatcgggt tcggcagctt caactcgggc 600

```

	agcggaaaca	tcggcctggt	caactcgggc	agcaacaaca	tgggattctt	caattccggc	660
	agcggcaact	tcggcacgc	aaactcgggc	agcttcaaca	ctggcatcgg	aaacacggc	720
	aacaccaata	ccggcctatt	caactcgggc	gacgtcaaca	cgggcgctt	caaccgggc	780
	agcttcaaca	ccggttagctt	caacacgggc	agcttcaaca	ccggtggctt	caatccgggc	840
5	aataccaaca	ccggctacct	caacattggc	aactacaaca	ccggcatcgc	caacacgggc	900
	gacgttgaca	ccggggcttt	catcacggga	aactacagca	acgggttggt	cttaagcggc	960
	gattaccagg	gcctggtcgg	cctcaacctg	gtgatcgata	tgctctccc	cataagcctc	1020
	ggcgtgaata	ttcccatcga	tatcccgatc	accgcctcgg	ccggcaacat	cacccttatg	1080
	ggcgtcacga	ttccggccac	cggcgatatc	gtcctttcgt	caatagcggg	ccagcgagcc	1140
10	cactttggcc	ccattaccat	tccgaacatc	acggttggtc	gccccacgac	gacagtcgcc	1200
	ataggagggg	cgaataaccg	gatcaccata	actggcggtg	gcgccattag	gatcccgctc	1260
	atcagtatcc	ccggcggcgc	agggtttcgg	aactcgacca	ccaacccgtc	gtcagggttc	1320
	ttcaataccg	gcgcgcggcg	cgctcgggc	ttcggaact	tcggcggcgc	caattcgggc	1380
	ttttggaacc	tggtctccgc	gacctcgggg	gcgtcggggc	tcctcaacgt	cggcgccttg	1440
15	ggatcagggt	tgggcaacgt	gggcaccacc	gtctcggggg	tctacaacac	cagcacgtcg	1500
	gacctcgcga	cgccggcctt	caattcaggc	ctggccaaca	tcagcaccag	tatcgcgggc	1560
	ctgctgcgcg	acagcacggg	caccatgggt	ctcaacctgg	gcttggaaca	ccacggcacc	1620
	ctcaactcgc	gcattcgcaa	cctcggcgac	tacaacatcg	gctttgcaaa	cctcggcagc	1680
20	gccaacttcg	gcagcgccaa	tatcgggtgg	aacaacatcg	gcggcgcaaa	caccggaata	1740
	ttcgacatcg	gtttggcaaa	tctgggcagt	tacaacatcg	gcttcggaaa	cttcggcgat	1800
	gacaacctgg	gcttcggaaa	cctcggcagc	tacaacgtcg	gcttcggaaa	cttgggcaac	1860
	gacaactcgg	gcttcggcaa	caccggcagc	aacaatatcg	ggttcgcgaa	caccggcagc	1920
	aacaatatcg	gcattgggct	cacgggcgac	ggccagatcg	ggttcggctc	cctgaattct	1980
	ggcagcggaa	acatcggcct	gttcaactcg	ggcagcggaa	acatcggcct	tttcaactcg	2040
25	ggcaacggaa	acgttgggcat	cggcaacacc	ggcaccgcga	acttcgggct	tggaacacc	2100
	ggcagcacca	acacggcctt	cttcaactcc	ggcagcgtca	ataccgggtat	cggcaacacc	2160
	ggcagcttca	acacggcgag	cttcaatccg	ggcgattcca	acacggggga	tttcaaccca	2220
	ggcagctaca	acacgggact	cggaaacacc	ggcgatgttg	acacgggcgc	cttcatctcc	2280
	ggcagctaca	gcaacggggt	cttgtggagt	ggaaattatc	agggcctcat	tggtttgcac	2340
30	gcggcgctag	cgattcccga	aatcgcccta	acccttggcg	tcgacatccc	gatacatata	2400
	cccatcaaca	tcgacgcggg	ggtcgtcacc	ctccagggct	tcagcatcgt	agctgcogaa	2460
	aataatatcg	acttcacccc	catcatcacc	cgcaccatca	atatcacctt	gcccacggcg	2520
	gcgatcaccg	tgggcgggacc	caccacctcg	atcggtatca	ccgccagcgc	cggtatcggc	2580
	ttcatcacca	tcggcgatcat	cgacattccc	tcggcatcgg	gcttcggcaa	ctcgaccact	2640
35	agtcctcgt	cggtcttctt	caactcggga	gcgggcagcg	cgtcgggctt	tttgaacgtg	2700
	gtcgccggcg	cctcagggat	ttcgggttat	ctcaatgtcg	gtgcgctggg	gtcgggtgtg	2760
	actaacgtgg	gtcacaccgt	ctcgggttct	tacaacgcga	gcgcgttgga	cctcgtgacg	2820
	ccggcctttg	ctccgggtct	catgcgcgac	ggatgaggca	cgatgactct	gaaccttggg	2880
	ctggcgaacc	tgggcagcaa	taacgcggcg	ttcggcaaca	ccgggatctt	tgacgtcggc	2940
40	gtggcgaaat	tgggcgaacta	caacatcggc	ttcggaaact	tcggcgacga	caacctgggc	3000
	tttgccaacc	taggcagcta	caacatcggc	gttgccaaca	ccggcagcaa	caatatcggc	3060
	tttgccaaca	ccggcagcaa	caatatcggc	atcgggctca	ccggtaccgg	ccaaatcggg	3120
	atcggcgctc	tgaactcggg	cagcgggaaac	atcggcttgt	tcaactcggg	cgaacggaaac	3180
	atcggcttct	ttactcggg	caccgggaaac	ttcggcatcg	gcaacacccg	caccgggaaac	3240
45	ttcggcatcg	gcaactcggg	cagcaccagc	acgggcttgt	tcaactcggg	cgaacggaaac	3300
	accggcggtc	tcaaccccg	taacattcaac	acgggcaatt	tcaataccgg	cagcttcaac	3360
	accggcggtc	tcaaccccg	taacaccaac	accggccact	tcaacacccg	gaactacaac	3420
	accggcatcg	cgaatacggg	cgacgtcagc	accggcgctt	tcatctccgg	caactacagc	3480
	aacggcatct	tgtggcgggg	cgactaccag	ggcctgatcg	gttactccta	cgcgctgact	3540
50	attccggaga	ttccggcgca	cttggagctc	aatatcccaa	tcgacatacc	gatcaccggc	3600
	agttttcacg	acctcgtggt	ggacaatttc	actatcccca	tcacgtgctt	cgaatccttc	3660
	gcgttttagct	ttcacatcca	taccgagccg	gacatcggtc	ccatcattgt	cccagccttc	3720
	gtgctcagcg	ttcccaactg	cgcgatcgcc	gtggcgaggc	ccacgaccgc	gatcaacatc	3780
	agcggccacc	ccggctcggg	ccccatcacc	atcccgatca	tcgacattcc	ggcagcgcgg	3840
55	ggcatcggaa	actcgaccac	cagcccgctc	tcaggcttct	tcaacacccg	cgcgggcacc	3900
	gcatccgggt	tcggcaacgt	cggcgggcaac	acatcggggc	tgtggaaact	tgctcggcga	3960
	gcctcaggag	tctcgggctt	gctcaacgtc	ggcgcggttg	gatcgggtgt	ggcgaatgtg	4020
	ggcaacacca	tctcgggtat	ctacaacacg	agcccgctgg	acctcgggac	gccggccttc	4080
	ggctccggcc	tcgcaaacat	cgcgggctcg	ctgcagggcg	gcgcgggcac	gacgatcctc	4140
60	gacttggccg	gcctcggcaa	cctcaatgtc	ggcttggcaa	acctcggggg	ctctaacttc	4200
	gggacgggga	acaccgggaat	cttcaatgtc	gggttcgcaa	acgtgggcaa	ccacaacatt	4260
	ggcttggcaa	acctggggcaa	ctacagcgtc	actcgggcaa	actcgggcaa	ctaccatata	4320
	ggcattgcta	acaccggcag	tgccaatatc	ggcttcgcca	acaccggtag	cggcaatata	4380
	ggcatcgggc	tcaccggcac	cggtcagatc	gggttcggca	gcttcaactc	gggcagccac	4440
65	aacatcgggt	tgttcaactc	cggtgacgga	aacgtaggat	tcttcaactc	gggcacgggc	4500
	aacgtgggca	tcgggaaacac	cggcaccgca	aactcgggca	tcgcaaaactc	gggcagcttc	4560
	aacaccggcc	tcgggaaacac	gggcagcacc	aacacggggc	tgttcaaccc	gggcaacgtc	4620

	aacaccggcg	tgggcaaacac	cggcagcatc	aacaccggca	gcatacaaac	cggcagcttc	4680
	aacactggga	gaccaaatat	cggcagcttc	aacctcggcg	atcacaaacac	cggcagcttc	4740
	aactccgggtg	actacaacac	gggctacttc	aacgggggtg	actacaacac	gggtgtggcc	4800
	aacacgggca	acgtcaaacac	cggcgcgttc	atctccggca	attacagcaa	cggtttcttc	4860
5	tggcgaggtg	actaccagg	gttgattggc	ctttccacaa	cgatcaccat	tcccgaatc	4920
	ccctaccgct	acgacttgag	tgttccaatc	gacataccca	tcaccggcac	cgtcgtcgcc	4980
	accacgccaa	acagttttac	cattcccggt	ttccagatac	gagtccttgc	tggtcctgcg	5040
	gcggtgcttg	tcaacgagat	gatcggcccc	atcacgatcg	atgtcaatca	agtcacgcgc	5100
	atcgattcgc	ccattcagca	aaccatcagc	atggttggca	cggcgggctt	cgcccgatc	5160
10	cccacggca	tcagcatcgg	tggtaaccgg	gttttcggca	actcgaccac	cgcccgctcg	5220
	tgggttttct	tcacacccgg	cgccggccat	gtatcgggct	tgggaaactt	cgccgcgggc	5280
	aacatgtcgg	gctccgggaa	cttcggcgct	ggcaattcgg	gcttctttaa	cgccggcggc	5340
	ttgggcaatt	cgggcctact	gaatttcggc	gcgtgcagat	cggtctggc	gaacctgggc	5400
	aacacatctc	gggcgctcta	caacacgagc	acgttggaac	tggcgacgac	cgcttcggc	5460
15	tggggcatcg	caaacatcgg	cgccaacctg	gcgggcctgt	tcctcgacaa	caccggcaac	5520
	ctgacgctga	acttcggcgt	cgcaaacacg	ggcggcctca	acgcgggcat	cggtgaacctg	5580
	ggcagcgta	acatcggcct	cggttaatac	ggcgactcca	acctgggcat	cggtgaacctc	5640
	ggcgacctca	acttcggcgg	ggtaaacatc	ggcggttaaca	acatcggcat	cgccaacacc	5700
	gggatcttcg	atatcggcct	ggcgaaacctg	ggcagctaca	acatcgggtt	ggcaaatctg	5760
20	ggcgacgaca	acctgggctt	tggcaacgac	ggcagctaca	acatcggcct	cgcaaatctc	5820
	ggcagcgaca	acctgggctt	tggcaacac	ggcagctaca	acatcggcct	cgcaaatacc	5880
	ggtaacaaac	acatcggcgt	cgggctcacc	ggcaacggcc	agatcgggat	cggcagcctc	5940
	aactcgggca	gcaacaacat	cggtctgttc	aactcgggca	gcggaaacat	cggttctctc	6000
	aactcgggca	cggtcaacgt	cggtatcttt	aacaccggca	cggtcaactt	cggtctcgcg	6060
25	aactcgggca	gcttcaaac	cggtatcggc	aacgggggca	gcaccaaac	gggcgtgttc	6120
	aaccccgggg	acctcaaac	cggcagcttc	aacccgggca	gcttcaaac	cggcgtgttc	6180
	aaccccgggca	gtggcaaac	gggtacctc	aacaccgggtg	actacaacac	gggcgtggcg	6240
	aacaccggcg	atgtggacac	cggtgcgttc	attaccggca	gctacagcaa	cggttctctg	6300
	gtgagtggcg	actatcagg	cctgatcggc	ctgcccgtgt	tgggcattcc	ggtgacccc	6360
30	ggctacttca	acctcactgg	cgcccgctcg	tgggcgttct	tcaacagcgg	cgccggaagc	6420
	gtatcgggat	tcgtgaactc	cggtgcggcg	ctgtcgggct	acctcaatac	cggcgcgctg	6480
	ggatcgggtg	tcgccaacgt	gggcaaacac	atctcgggct	ggttgaaacg	cagcgcgctg	6540
	gatctcgcga	cgccgggggt	cctttccggc	atcggttaac	ttggcaccaa	cctggcgggg	6600
	ttctttagg	gataa					6615
35	<212> Type : DNA						
	<211> Length : 6615						
	SequenceName : SEQ ID 518						
	SequenceDescription :						
40	Sequence						
	-----						
	<213> OrganismName : Mycobacterium tuberculosis H37Rv						
	<400> PreSequenceString :						
	atgtcgttcg	tgttgatcgc	accggaattc	gtgacagcag	ccgcggggga	tctgacgaat	60
45	ctgggttcgt	cgattagcgc	ggccaacgcg	tggcgagcca	gtgcgaccac	gcaggtgctg	120
	gctcggggcg	cgattagagt	gtctgcccgt	atcggcgcg	tgttcggcg	gtttggcctg	180
	gagtagcagg	cgattagtgc	gcaggtggcg	gcctaccacc	agcggtttgt	gcaggccttg	240
	agtaccggcg	cgggcgcata	tgcctcggcc	gaggccgcgc	ccgctgagca	gatcgtgctg	300
	ggcgtgatca	atgcgcccac	ccaggcgctg	ctggggcgcc	cgttgatcgg	tgacggcgcc	360
50	aatgcgacga	ctcccggcgg	ggccggcggg	gccggcggtc	tgctgttcgg	caacggcggg	420
	gccggggcag	ccggggcgcc	cgcccgagcc	ggcgggcctg	gcggggccgc	cggattgtgg	480
	ggcaacggcg	ggcccgcgcg	ggccggcgcc	agcggtgggg	gcaccggcg	tgccggcgcc	540
	gccgggtggg	ggctgttcgg	gggtggcgcc	ccggcggggt	tcgggtgggg	cgggtggcg	600
	accggcgggg	cgggcgggcc	cggtgttttg	atctggggcg	gcggcggggc	cggcggtgtc	660
55	gggtggggcg	gtggcgggc	cgccggggcc	ggcgcccgcg	ccgagctgct	gttcggcgcc	720
	ggcggtgcgg	gtggggcggg	caccgacggc	gggcccgggt	ctaccggcg	gaccggcgga	780
	cacggcgagg	tcggcgggca	cgccggatgg	ctggcaccgc	gcggggcgcg	cggggccggc	840
	gggcaaggcg	gggcaggtgg	tgccggcgag	gattgtggcg	cgttgggtgg	taccggcggg	900
	acggggcggt	ccggcgggcg	cggtggcgcc	ggcggtcgcg	gcgcactgct	gctgggcgct	960
60	ggcggaacgg	gcggcctcgg	cgcccgccgg	ggacaaggcg	gcaccggcg	ggccggcgga	1020
	gatggcgctc	tgggggggtg	cggtggcact	gggtgtaagg	gcgggtgtcg	cggcggtggc	1080
	ggcctcggcg	gggcgggtgg	tgccggcggg	cagctcttca	gcgcggagg	cgcggcgggg	1140
	gccgttgggg	ttggcgggc	cgccggccag	gggtgggggt	gcgggtgcgg	agcgcccggc	1200
	gccgacggcc	ccgccagcac	aggtctaacc	gggtgttaac	gggttcgctg	cggggccggc	1260
65	ggcgtcggcg	gccagggcgg	caacggccatt	gccggcggca	tcaacggctc	cgggtggtgc	1320
	ggcggaacgg	cgccgcaagg	cgccggcggt	ggcatgggtg	gctccgggtc	tgataatgcc	1380
	agcgggattg	gcgcggcg	cgccggcggt	gggactggcg	gtaacggcg	cgcggcgggg	1440

	gcccggcgggg	ccggccggcac	cggaggaacc	ggcgggggttg	tcggcgccgc	gggcaaggcc	1500
	gggtatcggcg	gcaccggcg	ccaaggcgcg	gccggcgcg	cgggcagcgc	cggcacggat	1560
	gcgaccgcta	ccgggtgccac	cggcgccacc	gggttttccg	gtggagcccg	cggggccggc	1620
	ggggccggcg	gcaacaccgg	ggttggcggc	accaaccgct	ccggcgggca	aggcggcacc	1680
5	ggcgccggcg	gcggcgccgg	tggtgctggc	ggtgtcggcg	ccgacaaccc	caccggcatc	1740
	ggcgccggcg	gcggcgccgg	cgggaaaggc	ggcgccggcg	ggcgccggcg	gcaggggcgt	1800
	agcagcggtg	ccggcgccac	caacggctct	ggtggcgctg	gcggcaccgg	cggacaaggc	1860
	ggcgccggcg	gcgctggcg	ggcgccggcg	gataacccca	ccggcatcgg	cggcgccggc	1920
	ggcaccggcg	gcaccggcg	agcgccggga	gccggcgggg	ccggtggcg	catcggtacc	1980
10	ggcgccggcg	gcggcgccgg	ggcgagcgtc	ggtaaccggc	ggatcgggcg	taccggcggt	2040
	acgggtgggtg	tcgggtgggtg	tggtgggtgca	ggtggcgctg	cggccgctgg	cagcagcgct	2100
	accggtggcg	ccgggtttcgc	cggcgccggc	ggcgagaaag	gcggagcggg	cggcaacagc	2160
	gggtgtggcg	gcaccaacgg	ctccggcggc	gccggcggtg	caggcgggcaa	ggcgggcacc	2220
	ggaggtggcg	gcgggttcgg	cgcggacaa	cccaaccggtg	ctgggtttcgc	cgggtggcgcc	2280
15	ggcgccggcg	gtggcgccgg	cggcgccggc	ggggccggcg	ggggcgaccg	taccggcggc	2340
	accggcgcg	ttgtcggcg	caccggtagt	gcaggcatcg	gcggggcgcg	cggcgccggc	2400
	gggtgacggcg	gcgatggggc	cagcggtctc	ggcctggggc	tctccggctt	tgacggcggc	2460
	caaggcgcc	aaggcgccgg	cggcgccagc	ggcgccggcg	gcggcatcaa	cggggcgccg	2520
	ggggccggcg	gcaacggcg	cggcgccggg	gacggcgcaa	ccggtgccc	aggtctcggc	2580
20	gacaacggcg	gggtcggcg	tgacggtggg	gccgggtggc	ccggcgccaa	cggcgccaac	2640
	gcggcgctcg	gcctgacagc	caaggccggc	gacggcgcg	ccggcgccaa	tgccggcaac	2700
	ggggcgcccg	gcgggtcgg	cggggcgccg	gacaaccaat	tcaacggcg	ccaggggtgt	2760
	gccggcgcc	aaggcgccca	aggcgccctg	ggcggggcaa	gcaccacctc	gatcaacgcc	2820
	aacggcgcg	ccggcgccaa	cggcgccacc	ggcgggcaa	gcggcgcccg	tggtgcccgg	2880
25	accctggcg	tcggcgccgc	cggcgccacc	ggcggggacg	gcggcgatgc	gggtctcgtg	2940
	gggtgacggcg	gcctcggcg	ggcgccggcg	aagcgccggc	gcggcgga	cggcgccgc	3000
	ggcggtgacg	gcggcgatgg	ggccagcggt	ctcgccctgg	gcctctccgg	ctttgacggc	3060
	ggccaaggcg	gccaaggcg	ggcgccggcg	agcgccggcg	ccggcgccat	caacggggcc	3120
	ggcgggggcg	gcggcaacgg	cggcgacggc	ggggacggcg	caaccggtgc	cgcaggtctc	3180
30	ggcggaacag	cgggggtcgg	cggtgacggg	ggcgccgggt	gcggcgcccg	caacggcgcc	3240
	aacggcgggc	tcggccctgac	agccaaggcc	ggcgacggcg	gcggcgccgg	caatggcgcc	3300
	aacggggggc	ccggcggtgc	tgccggggcc	ggcgacaaca	atttcaacgg	cggccagggt	3360
	ggtgccggcg	gccaaggcg	ccaaggcgcc	ctgggggggg	caagcaccac	ctcgatcaac	3420
	gccaacggcg	gcggcgcccg	caacggcgcc	aagcgccggc	aagcgccgc	cgggtggtcg	3480
35	ggaacccctg	gcgtcggcg	ctccggcgcc	accggcgggg	acggcgccga	tgccggctct	3540
	ggtggtggcg	gcggcttcgg	cggggcccg	ggtaaaggcg	gcggcgcccg	aaacggcggt	3600
	ggtggcggtg	acggcgccga	gggagccagc	ggtctcggcg	tgggcctctc	cggctttgac	3660
	ggcggaacag	gcggggccgg	cggggccggc	ggcgccggcg	gcggcgcccg	catcaacggg	3720
	gccggcgggg	ccggcgccac	cggcgggggc	ggtggtgacg	gcggccccgg	gacctgac	3780
40	ggcggaaccc	acggcggtga	cggcgcccaa	ggcgccatcg	gcggggacgg	cggcaacggc	3840
	ggattcggcg	ccgggtgttc	cggcgacggc	ggggacggcg	gcaacggccg	attcggcgcc	3900
	ggtgttcccg	gcggcgccgg	gatcgccggc	accggcgggg	ccggggcgcg	cggcgccgc	3960
	ggcgccgacg	gggacccag	cattgacggc	ggccaagggt	gtgcccggcg	ccacggcgcc	4020
	caaggcgcca	aaggcgccct	gaacagcacc	gggctaagca	gcggcgccag	cgggtgacggc	4080
45	ggcaacggcg	ggggccggcg	ggcgccggcg	aacggcgccg	acggcgacgg	ctttatcggc	4140
	gggtccggcg	gcaccggcg	gaccggcgcc	ggcgccggcg	tcggcgccct	ggccaacacc	4200
	ggcggaaccc	cgggcaacgc	cggtatcggc	ggggccggcg	gcggcgcccg	cgcggcgccg	4260
	gccggcgaca	gcggcgccct	ctcccaagac	ggcaacggct	tcggcgcccg	ccaaggcgcc	4320
	caaggcgggg	tcggcgccga	cgcggcgcc	ggcgccatca	acggggcccg	cggcacccgg	4380
50	ggcacccggcg	ggggccgggtg	tgacggccag	aacgggaacga	caggcggtgg	gagcgaggcg	4440
	ggcgccggcg	gccaaggcg	tgacggcgcc	caaggcgcca	tcggcgggcg	cggcgccaac	4500
	gccggattcg	gcggcggtgt	tcggcgccag	ggcgggatcg	gcggcacccg	cggggccggg	4560
	ggcgccggcg	gcggcgcccg	cgcgggggac	cccgagcattg	acggcgccca	aggtggtgcc	4620
	ggcgcccaag	gcggcgccag	cggcgaaggc	ggcctgaaca	gcaccgggct	agccagcgcc	4680
55	gccagcggtg	acggcgccaa	cggcgggggc	ggcgggggcg	gcggcaacgg	cggcgacggc	4740
	gacggcttta	tcggcggggtc	cggcgccacc	ggcgggacgg	gcggcgacgc	cggcgctcgg	4800
	ggcctggcca	acaccggcg	aaccggcgcc	aacggcggtg	tcggcgggcg	cggcgccggc	4860
	ggcgccgacg	gcggggccgg	cgcacagcg	gcctctccc	aagacggcaa	cggcttcggc	4920
	ggcgcccaag	gcggcccaag	cggggtcgcc	ggcaacggcg	gcggcgcccg	catcaacggg	4980
60	gccggcgcca	ccggcgccac	cggcgggggc	ggtggtgacg	gccagaacgg	aacgacaggc	5040
	gtggcgagcg	aggcgccggc	cggcgcccaa	ggcggtgacg	gcggccaaag	cggcatcgcc	5100
	ggggccggcg	gcaacggcg	attcggcgcc	ggtgttccc	gcgacggcg	gatcgccggc	5160
	accggcgggg	ccggggcgcc	cggcgccggc	ggcgccgacg	gggaccccg	cattgacggc	5220
	ggccaagggtg	gtgcccggcg	ccacggcgcc	caaggcgcca	aaggcgccct	gaacagcacc	5280
65	gggctagcca	gcggcgccag	cggtgacggc	ggcaacggcg	ggggcgcccg	ggcgccggcg	5340
	aacggcgga	ccggcgggct	cggcgggggc	ggtggcacag	gcggcaccaa	cggcaacggc	5400
	ggcctcggcg	gaggcgccgg	caacggcgga	gccggcggtg	ccggggggaac	gcccaccggc	5460

```

    agtggcaccg aggggaccgg cggcgaccgt ggagatgccg gcgccggcgg caacggcgcg 5520
    tctgccaccg gcgtcggtaa cggcggtaac ggcgggtgat gcggcaacgg cggcgacggc 5580
    ggcaacggcg caccggcgcg cttcgggtggc ggcgctggcg ccggcggtctt gggcggtctcc 5640
    ggcggcgggc ggcggcaccga cggcgacggc ggcaacggcg gcagccccgg caccgacggc 5700
5  agctaa
    <212> Type : DNA
    <211> Length : 5706
        SequenceName : SEQ ID 519
        SequenceDescription :
10
    Sequence
    -----
    <213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
15  atgtcgttgg tgatcgtggc ccgggagacg gtggcgggcg cagccttaga tgtggcgcgcg 60
    atcgggtcat cgatcggcgc ggccaatgcg ggcggcgggc ggtcgaccac cagcgtgctg 120
    gccgcgggcg ccgatgaggt gtccggcggc atcccgacgc tgtttggcag ccatgctcgg 180
    gagtatcagg cgatcagcac gcaggtggcg gcgtttcatg accgatttgc gcagacgtta 240
    agcgccggcg tcggctcgta tgtcagcgcg gaggcgacca acccgccacc gttggcgacg 300
20  ctggagcaca acgtgtctaa tgccctcaat gcgccacccc aggcgttgcg gggtcgcccc 360
    ttgatcgggt cggggcgggc tggagcaccg ggcacggggc aggcggcgcg ggcggcgggg 420
    atcttgtggg gcaacgggtg ggcggcgggc tcgggcgcgc ccggccaagt cggcgggggc 480
    ggcggggggc ccgggttgtt cggcacccgc gggggcggtg gggcgcggtg ggcggcgggc 540
    gccgggtggg ccgggggtag cggcggtctg ctgctgggca atgggtggagt cggcgggggc 600
25  ggcgggtaac gcgggtgagg cggggcaccg ggacacggcg ggcggcgggc cggactgttc 660
    ggggtcggcg gaaccggcgg gcccgcgggg cccggcgggc ccggcggggt cggcggtacc 720
    ggtggtgccc gtggcctggg cgggacccctc tacggggcgc gcgggcacgg aggtgcccgc 780
    gggcccgccc cgatcgggtg tgtgggtgga cacggcggtg tcgggggtgc ggcggggctg 840
    ttggcggtgg cttctgcccg tggtcggcgg cggaggggtg ggcggcgcca ggcggcgcca 900
30  gccggtgagg acttgtcccc gcacggtacg tccggtgggg tcggcgcgca cgcggcgcat 960
    gccggcaccg gagggcgggg cggctgggtg gccggcgccc gtggggcgcg cggggcgcggt 1020
    ggggttggcg ggaccggcgg gcccgcgggg gccggatttt ctctgtgcctt gattgtcgct 1080
    ggcgggtaac gcgggtgacc cggcgccggc ggcggcgggc gcaccggcgg agccggctcc 1140
    acgatcggtg cccacggcgc gcccgggggc agccccacca gcggcgggcaa cggcgggggc 1200
35  gccggcaacg gcgcccactt ctcatcgggc ggcaaaagcg gcggtaacgg cggggcgcggt 1260
    gggggcgggc ggctgtgcgg caatggcggg gcccgaggtg ccggcgggcaa cggcgcccc 1320
    ggcggcggtg cttctgcccg cgaccctaac ggcgggtggc gcggagctgg cggcggtggc 1380
    ggtaaggggc gcgacggcgg agcccaagca ggcgacggcg gtgctggcgg cgcggcggtg 1440
    aaggggcgga acggcgggcaa cggcgccacc ggcggccacc gccttaacgg cctgggggca 1500
40  ggcggcggtg gcaccgacgg cggcaagggc ggcaacgggt gagccggcgg tggcggtgga 1560
    gccggcggtg cgggtggtaa ggcgcttgca aacggccacc aggaaggcag catgggtgcc 1620
    ggcggggggc gcggaaacgg cggcgccggc ggcgatggcg gtgatggcgg caacgggtgc 1680
    aaggggcacg tcgataacgg cggcgatgga gttggtggca acggcgggcaa cggcggttagc 1740
    cgcggcatcg gtggtgctgg tgggatcggc ggcggcggtt ccaccggcgg tgcagacgg 1800
45  gccggcgggc ccaccggcgc cagcgggcgc cggcgggcaa cggcgggcaa cggcgcggaac 1860
    gccaccgtcg ccggcggggc cggcgggggc ggcggcaagg gcggcaacgg cgggcttgtt 1920
    ggtaatggcg gggccggcgg caaaggcggg gacggcatgg ccggtgtcgc cggttcctcg 1980
    cccaccaccg cgggcgaatc cggcacgagc ggcagaaacg gcgggggtgg cggggcgggc 2040
    ggggcggcgg gccggggcgg agacttcggg ggcgacggcg ggaccggtgg ggcggcgggc 2100
50  aacggcgcca acggcgccaa cggcaccacg ccggcgccca agggcgggcga cggcgggcac 2160
    ggcggggccc gcgcgcaagg cggtaacggc ggcgaaggcg ggcggcgcgg tttggcgggg 2220
    aacctctttg gccagaaagg aatccagggt gtcggcggtt ccggcgggcaa aggggggggc 2280
    ggcgggtcgc ccgggtgacg cggcaacggc gccaacggca acttcgcctt cggcgatgg 2340
    aacggcggtc acggcggtaa cggcggtaac cccggcgccg gcgggcaggg cggtagcggt 2400
55  ggcgcgggct ctaccccgag cggcaagggc gccacggct tccactccaa cagcgggcg 2460
    gacggcgggc acggcggcaa cggcgggcaa tcccaagtgg tcggcgggca cggcgggcgc 2520
    ggcggcaatg gcggcaacgg cggcagcgcc gccacggggc gcaacggcgg ccgcgggcgc 2580
    gacggcggtt ttggtggcat gaggccaac gccaccaacc ctggtgaaaa cgggccaac 2640
    ggtaaccccg gcggcaacgg tggcgccggc gggcgccggc gggcgggcct gaacggcggt 2700
60  aacgggtggc ccggcgggcaa cggcggcctc ggcggattcg gcggcaacgg cgcggcggg 2760
    gccaacggcg tggcggtggg tgcgcgggga caaccggcg gtgcccggcg gcaacggcg 2820
    gccggcgggc acggcggggc cggcgggcaa ggcgggtcaag gcgtagtcag cgacggcgcg 2880
    ggcgggtgccc gtggggccgg cggcgacggc ggtgctccc gtgacggggc caacggcggc 2940
    aacggccagg gaggcggggc cttcgccggc ggcggcgggc ggcgagggcg cgacggcggc 3000
65  aacggcggca acgcgggtgc cgcggggccc ggcggcacgg gctccaccgc aggcaaggcg 3060
    gggcgggcgg gcagcatcct gcacgacggc gccaacggcg gtcacggcg ccacggcgct 3120
    gccagcgggc gaaacggcgg ccccgggcgg caccggggta acggcggtta cggcgggcac 3180

```

ggcgccaacg gcggcaacgg tggcatcggc gggactggcg gcgcccggcag caccggcgcc 3240  
aagggcgctc tcggcaccaa cgaggcgat gggcggtgacg gcggcagagg cggcaacggc 3300  
ggcagaggcg gcaacggcgg ccaaggcctc accggagcgg gcggcaacgg tgggaccggc 3360  
gggacaccgg gcaacggcgg caacgggtggc aacggcgcca gtggcgacct tgtcacctca 3420  
5 cctgggtgacg gcggcgggcg gggcgcgga ggcgatgcag gacgcggagg cgatgcagga 3480  
cttggcggtt ccagcgggcc aggtggcacc ccggcgact ggggcaccgg cggcaccggc 3540  
ggcaccggcg gcaccggcgg ccagggtgcc aacggcgggc tcaccggcgg cagaggcggc 3600  
actggcgcca acggcggcaa cggtaacacc ggcggcaccg gcggcgctgg cggcaccggc 3660  
ggcaccggcg acaacggctc tcagcctggg atgggtggca acggaggtgc gggcggtttt 3720  
10 ggcggcgaat gttttggcg cgtcggtggc cggggcgga tgggtggctc cgggggcacc 3780  
ggcgccaccg gcgacggcgg gcccttttga acaggcaccg gtgggaccgg tggccaccgg 3840  
gggcagggcg gtggcgcgcg cttcagcatc ctcttggtc tcggcggtct cggcgcgctc 3900  
ggtagcccg gggtccatcg cacagggtacc gccggcgcg cggtggcgcg cgggtggctc 3960  
ggcgggcgctg gcggcgcgca attcgtgtag 3990  
15 <212> Type : DNA  
<211> Length : 3990  
SequenceName : SEQ ID 520  
SequenceDescription :  
20 Sequence  
-----  
<213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :  
25 atgtcatatg tgatcgcgac gccggagatg atggcaactg cggtttttga tctggcgcggt 60  
attggttcgc aggtgagcgc ggctagtgcg gtgcgcggcg tgcccagacg ggaagtgtgtg 120  
gccgcggcg cgacagaggt tccggcgggc atcgcgcggt tgttcagcgc gcacgctcag 180  
gagtatcagg cgctaagtgc gcaggccgcg gcgttttcacg accagttcgt gcacacgctg 240  
accgcggcg cgaggttgta caccggccacc gagatcgcca acgcccgggc gatgcgagtc 300  
gtgctcgga cgtgtaatgc gccacccag acgctactgg gacgcccgct gatcgcgat 360  
30 ggtgcgcacg ggacagcgcc tgggcagccc ggtggggcg gtgattgtt gttcggcaat 420  
ggcgccaacg gcgctgcgg tgccgtcggg caggtggcg gcgcccggcg ggcggccggg 480  
ttatttggga tcggcgcgcg cgggtggcgcg ggcggggcg gcgcacccgg aggtaccggc 540  
gggacgggtg gatggctggc ggggtggggc ggcgtcgcg gtatgggtgg ggttgggtgg 600  
ggcgccggcg gggcggggtg ccaacggggc ctgttcggca atggcgcgcg cggcgggcg 660  
35 ggtggggctg gtggtggcg cgcgcgcgcg ggcggtaacg cggggtggtt tggatcatggg 720  
ggcgctggcg gcgtgggtgg ttagagtgcg gccggggcca acggtgctac gcccggtcag 780  
gatggggcg cgtgtgttgc cgggtcgacg gcggtgacgg tttggcaggg 840  
tcggacgggg gcgatggcg tgccggtggg gtgggcggca acggtggtcg gggagggtgg 900  
cttctcggtg acggcgcgcg cgggtggcggt ggcgggtgtc gcggggccgg tgggtgccgg 960  
40 gcggccggcg gtgcccggcg tgccggggct accggaataa atgggcggcg cggtatctcg 1020  
gcggccggcg gtgacggcg cgccggcggt aatggcggtg ccggcggaaa cggcgcgctg 1080  
ggcgcgcgcg ggggtgctgg cgggtcggtt ggactattgg ggtatgtcgg ccggggccgga 1140  
gacggcgggg ctggcggggg tggggggctg ggtggagcgc ctggtgacgg cgggtgccgg 1200  
ggcaacgggt gcagttggct ggccgcgggt gacggcgggg ccggcggtca cggtgccgac 1260  
45 ccgggcccgt gtggggctgg cggagccggg gggcgctcgg gcggcgccgg tgcctcgcg 1320  
ggggccaatg gtctggcgcg cggcaacgac gggcggtca cggcgggcaa cggcggcaa 1380  
ggtggcaatg gcgcccacgc accggtcgcc ggcgggtcat gcggtaacgg cggtgccgg 1440  
ggcaacggcg ggttggctgg tgacgggtgg gccggcggtc atggcggtga cggagcccg 1500  
ggtgccggct atccgatat gacggcgatc ttcctgggtt catccggtac ccccggtgag 1560  
50 gatggaggtg acggcgggcg cgggtggggc ggcggcgcg gtggggccca cgccggcgat 1620  
ggcgggggcg gcggtgcgg cggaacgggt gggggccggg gggccgggtg taacggagct 1680  
cacgggtttc atgctgtgct cgtatctgac ggcggcaacg gtggtgatgg cggagccggc 1740  
ggtcgcgcg gtgacgggtg ggcgggtggg gctggcggtg acgcacctgc gggtcggggc 1800  
ggcagccagg gtgttggcg ggacgggtgg tccggcgggg ctggtggggc gcccggtaac 1860  
55 gggggcagcg gtggcccgcg cgacatggct tcaaggatg gtgacgggtg ggcggcgcg 1920  
gatggtggtg acccaggcgc cgggtgggaag ggtggcgcg gcggcgccgg cgccaccgag 1980  
ggtgtgaccg gcgcgaccgc cgctaccgtg cacagtgggt gcaacggcg caaggcggt 2040  
aacggcgccg acgcccacgt ggctggcgcg aacggcgga agggcggtgc cggtggtaac 2100  
ggcggggttg tcggtgacgg cggggcgggc ggcgacgggt gtagcgcgcg ggcgggtgcg 2160  
60 aatggcgga acgtaggtga ggacggcgcc gacggcaccc tctcggggca accggcgga 2220  
ggagcgagg ccaacggcg tcaaggcgcg gttggcggtg gcggcgcggg cggtgccggc 2280  
ggtagcggtg gtgcccggag ttcgcggtta ggttagggcg gcaacggcg tccagggcat 2340  
gcggggcagg ccggcgcgcg gggcggtgcc ggcggagcgg gtggcgcgcg tgggtcgggt 2400  
tcggggcagc gtggaccggg tggcaaggcg gggggcgcg gtgcgggtgg tgccggagct 2460  
65 agtgggtggc gcggcggcaa gggcgccctc ggcggcgaca gcgctgaggg cgttggaggg 2520  
gcggcgggga aaggcgcgga cggcggtgtc gcggcggttg gcggtgacgg cggggccggc 2580  
ggtgatggcg gcgcccggcg ggccgcaccc ggcgggtcagg tcggcgagca cgggtgtcggc 2640

5 ggcgttgccg gtgacggcgg gctcggcggg gccggcggca acggcgggtga cggcgggtcat 2700  
 ggcagtgatg gcgggggacgg cgggtgacggc ggtgaccccg gcgcgggagg cctcggcggc 2760  
 ttggggcggcg acagcgggcaa cggcaccgcg gcggccagcg gtgtggacgc cagcgaccac 2820  
 gggcccggca .gcggcggcaa cgggtgtaac ggtggcaacg gtgcgcaagc cagcgtcgcg 2880  
 ggcggcggcg ggggcaacgg aggcgacggc ggcaatgccg gccgggtcgg cgatgggtggc 2940  
 gccggcgcca atggtggcga tggcgcgccg gcgcgcaacg gggccaattc gggcgcgcc 3000  
 ggttcagatg cctcgcctc cggccaacgg ggaggcaacg ggggtcaggg cgacgggggg 3060  
 caggccggcg gtcccggtgg tgccgggtgg gccgggtggc ccgggtgggtc ggtgtcgggt 3120  
 gacggcgggt cccggcgcaa cggcggggcg gccggcaacg gccgtgtggg cgctagcgg 3180  
 10 ggggcggggc ccaggggcg ccaacggtatc gcagtatcg gcggcaccgg tggggcgggc 3240  
 ggtggtggcg gcgatggcg tgccggcggg gtccgtggac atggcgggga cggtggggtc 3300  
 ggcggggccg caccttcggg gacggtcggc agtcacggca ccgggtgggtc cgttggcgac 3360  
 ggcggactcg gcggcgccgg cggcgctggc gggcgcgggc gcaacggcgg catttggtatc 3420  
 accggcgccg gcgcggcggt agcggcggtg agcggcggtg aggcgggtcg aggcgggtcg 3480  
 15 ggcgggtctg ggggtgacag cggcaacggc acctcccgcg ccaacggcgt ggacggcagc 3540  
 aaacacgggc cactgaccgg cggcgacggc ggcgtcgcg gcaacggtcg caaggccgc 3600  
 ggcggcggcg gcgacggcg ccaggggcgg gacggcggca acgcccgggt attcggggag 3660  
 ggcggagccg ggtgtgatgg ggccgacggc accgttcggc aagctctcgg cggtgatggc 3720  
 gggggcgggt gggctggagg caaggggcgg gacggcgggc acatcggtga cggcggtgac 3780  
 20 ggcggcaagg gtggcgacgg cgcgacgggt gccctcggag ggctcaccgt tctggcgac 3840  
 aacgggtggg ctggtggcgc cgggtggggc ggtggcgccg gcggagcatt tctggcgac 3900  
 ggcgggaacg gcggagccgg cggccaaggc gggcgcgccg gggcgcgag ccccgcgcg 3960  
 ggcggcgggg ttggtggaca cggcggggcg ggcggcgacg ccgggatgaa cggcgcgcg 4020  
 ggaacggcg gccaggggagg caacggcgcg gccgggtggc cgggttggtc gcccgactcc 4080  
 25 gacctaagg gcttcgacgg cttcgacggc ggcagcgggt gggcgggagg cgacggcggg 4140  
 gccggtggcg ccggcggaac tcagaccggc gacggtgggt acggcggggc cggaggccta 4200  
 ggcggggctg gtgggtcgg cggtaacggc gttgacggct ttgacattaa cgaaacgacg 4260  
 ggcgcgacg gcggcgacgg cggcgacggg ggttacggcg ggtggggcg cgcggcgga 4320  
 aacggcgggg ccggcggggt ggcacccgcc ggcgaggtcg gcaatcgagg cgttggcggg 4380  
 30 gacggcggtg acggcggtg gggcggggac gctggtaatg gtggcttggg cggtagcggc 4440  
 tttacctatc tcgcggatct tgacggagag cctggcgggc acggaggtga cggcgcgac 4500  
 ggcgggtggg gccgcccccg cggacaaggc ggtttcggtt ccacaagtgg cgcgcacggc 4560  
 aaggccggct tcggcgcccc cggcggtgac ggaggcgacg gcgggaacgg cggtcacgg 4620  
 ggggacggca ccggcgactt tgctgatgca ggcgacggcg ggcgggtgg ccaacggcg 4680  
 35 aacggcggtt tgggtggggc cggcgagac ggtggcgccc ccgggtggtga cggaggcgac 4740  
 ggcgggaacc gcggtcccg cggcttcggc gccctccgc ctcgcagcat cggcggtggt 4800  
 gacggcgggg acggcgggcg cggaggtgac ggcggacggc gtgcccgtgg cttgacctcc 4860  
 ggcggcgctc gtcggtcggg cgagtcgggt ggtccggca acgggagggg cgacctggc 4920  
 40 tccggcggtt ccggcggtga aggcggcgaa ggcggccct ccactctcgt taacgtcacg 4980  
 tag 4983  
 <212> Type : DNA  
 <211> Length : 4983  
 SequenceName : SEQ ID 521  
 SequenceDescription :  
 45 Sequence  
 -----  
 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :  
 50 atgtcgtttg tgttggtttc gccggagacc gtggcgggcg tggccacgga tctcaagcgc 60  
 atcggcgccct cgctggccca cgaaaacgcg tcggcgggcg cttcgacgac ggcgggtggtc 120  
 tccgcggccg ccgacgaggt atcgacggcg gtccgcgctc tgttctccca acacgccag 180  
 ggctaccaag cggcgccgcg tcaggttagca gcgtttcata gccggtttgt gcaagccctg 240  
 acggccggtg ccggggcgta cgcattttgc gaggcgggca acgcgtcgcc gctacagtca 300  
 55 gccatgggtg cggtaagcgc gtctgcgcag acgctgttgt cgcgcccgtt gatcggaat 360  
 ggcgccaatg cgacgacgcc gggcggtaac ggcggcgacg gcggatggct attcggcagc 420  
 ggcggcaacg gcgcgcccgg cgcgcgggcg cagtcggcg gtaacggcg gtcagccgga 480  
 ctgtggggta acggcgggcg ggttggcgcc ggcggcagcg gcggcgccgc cggcggaac 540  
 ggcggtaacg gcgggtggct gttcggcgcc ggcggcaccg gcggtatcgg cggcaccggt 600  
 60 gctcccggcg ccatggcgcg caccggcgcg aacggcgga acggcgcgct gctgatcggc 660  
 ggcggcgccg tcggcgggcg cggcggtatg ggtggcaccg gcggcgggc cggcgggcacc 720  
 ggcggcaacg gcggcaacgg cgcgctgctg atcgcgctg gtggtgtcgg aggtgctggc 780  
 gggatcggtg gccagggtac cggcgccggc ggtgccgcg gcggcgggcg caccggggggc 840  
 aacggcgcg ccgggggggt gttcatgaac ggcggcgacg gcggcgcccg cgggtcaaggc 900  
 65 ggcgacgggt cggcgggcga cgcggctgcc agcgccggcg gcaccggcg caaaggcgcg 960  
 caaggcgcg cggcgggcgg cggaggggcg ggcggcgacg gccagtgct gttcggccac 1020  
 ggcggcgccg gcggcatggg cggccaaggc ggcaccggtg gaatggggcg cgcggcgga 1080



```

gacggcacca ccgtcatcgc ggcgggtacc ggggggggagg gcggcaccgg cggcgcgggc 1140
ggcgccggcg gagccgcagg cgctcgcggg gctctcacca gcggcgggct agccggcggc 1200
gtcggggccg gcggcaccgg cggcaccggc ggtaccggcg gcaacggcgc tgacggcgct 1260
gctgtggttg gcttcggcgc gaacggcgac cctggccttc ctggcgggcaa aggcggtaac 1320
5 ggcggaatag gtggggccgc ggtgacaggc ggggtcgccg gcgacggcgg caccggcggc 1380
aaagggtggc ccggcggtgc cggcgggccc ggcaacgacg ccggcagcac cggcaatccc 1440
ggcggttaag gcggcgacgg cgggatcggc ggtgcccggc gggcgggcgg cgcggccggc 1500
accggcaacg gcggccatgc cggcaacaca ggtgacggcg gcgacggcgg gaccggcggt 1560
aacggcgggc acggcaccgg aggcgtgaac ggcgcggaca acacctcaa ccccgacacc 1620
10 ccggcgggcg ccggggagcc cggcgggggc ggcactggcg gcgggggcgg cggggcgccg 1680
ggcgggcccg gcggtaccgg cggtagcggc ggtaacggcg gcaacggcgg caacggcggc 1740
aacggcgggc acggcgggcaa cggcgggcaac ggcggcaatg ccggcaacaa cagcaccaat 1800
gccccagtcg gtggcgaaag cggcgccggc ggcgacggcg gcgcccggcg cgcaggcggg 1860
gcgcgcaacg ccgagcagcg ggcactggcg ggcactggcg gcgacggcgg cgcaggcggc 1920
15 gcgggcgggc acggcgcgcg cggcaaggct ggcaccggca acagcgggca ctttgggggtg 1980
gacggcggaag ccggcttcag cggcgggcgc ggtggcaacg gcggcgtagg cggggcgcgcc 2040
ggcgccaatg gcggaaccgg cggcagcggt ggtaatggcg gtgacggcgg tgcgggaggg 2100
attcgcgggg ccggcgggcaa cggcataacc ggcactggca cagagcctgc cggggcgacc 2160
ggcgccaaag gtggagacgg cggcgacggc ggcgcggcg gcgacggcgg caatgccggc 2220
20 gggggcgggc gccaggcgcg caatgccggc cagggtggcg ccggcggtgc gggcgggcaac 2280
gcggtgattc ccggcgacgg cgtcgggaag gcgcgcgacg gcgacggcgg cggcagcggc 2340
ggagacggcg ccgagcgcg cggcgcggt agtgcgggca ccggcggtat cggtgccccg 2400
atcggtggcg gcgcccggag caccggaggc tccggcgga acgcccggca gggtgggcgc 2460
ggcgggcatc gcgcacaggc caccaccatc accgtgcccg ggaacggcgg caacgcggc 2520
25 gacggcgggc acggcgggcaa cgcggcgccc ggtggaaacg gcggctccgg cgaactcggt 2580
ggcaatacca ccagcgcgcg ctcggcgacg ggcggcaacg gcggcaacgc cggcaccgcg 2640
ggtagcgggc gtgcggggcg aaccggcggc accggcctta gcggcgggca cggtgggcaac 2700
ggcgggcaacg gcggcaacgg cggtagcggc ggtaacggcg cccacggcac cgtcggcgcc 2760
cagttcgtcc cggccaccag cttgcccaca cccaacggcg gggccgggtg caacgggtggc 2820
30 accggaagca acggcgggc ccccgggccc cggcgggcgc ccggccccac taccggcggt 2880
aacgctggca gccaggggat cggcgggcgc gggggcaacg gcggcgacgg cggtaaaggc 2940
ggtgacggcg ccgacgctgt caacgtcgta ttcattgccg ctgagccaca ggcgcggacc 3000
ggcactggcg gcagcgccgg tgaccccacc ggcggtaacg gagggcccgg cactcccggc 3060
agccccatgg ttcgcccgcc cccgccaacg ccaatcactc aagtccaaca gggcggtgac 3120
35 ggtggcgccg ggggcaccgg atccaccaac gccaacgacg gcacagccac cggcggaag 3180
ggcgggagag gcggagtcgg cagcattctc ggcgggcccg gcggcaacgg cgggaactggc 3240
ggcaacgcct cggcaaccgg caccaacggg gtggccaacg ccgggaatgg cggcaagggt 3300
ggcgacggcg gccagtgtgg ggcggcgggc aacggtggtg ccggcgggcag cgtaacggac 3360
40 ggatccggcg gcagcaccgc aggcaacggc ggcaacggcg gcaacgcaac caacggcacc 3420
atcgacggcg aaccgcggcg cggcaacggc tcggcgggcg ggaaggcgcg cagcggcgcc 3480
aacatcgccc ccggtgccac cggcaccggc ggcaacggcg ggaacggcgg caacggcaac 3540
gacggcgccc tcaacggcg caccggcgcc tcggcgggga acggcggtaa cgcgggtggc 3600
ggcgggcgca atggcgcgga cggcgggcgc ggcggcgccg gcggggcgcg cggcggtggc 3660
ggcaagggca tcgacggcg gttcggcggt gacggcggca acggcgggcag caacaacggc 3720
45 accggcgccc gtggcaacgg cggcaacggc ggcaccggcg gggtcggctc ggttggcgcg 3780
gctgggtggc atggcggcaa cggcgggcac cgggcttcgg ccggtttcgg cggcaccgca 3840
ggcaatggcg gttccggcg caccggcggg gccggcgggc acggcgggc cggcggggac 3900
ggcgggcaac gcgttatcgc cggcgggcg gggacggcg gcaacggcg cgccagcggg 3960
ggcaccggcg ccggcgggc gggcggggt gccggcaacg gcaatgccgg cggcaatggc 4020
50 ggcggcgggc gcgcgagcga ggacggcgac aacggcaacg ctggcgagcg cgccaccggc 4080
ggtaccggcg gcaacggcg caccggcggc gacggcgggc ctgcccgggt gggcgggcgtc 4140
gctga 4146

```

<212> Type : DNA

<211> Length : 4146

55 SequenceName : SEQ ID 522

SequenceDescription :

Sequence

-----

60 <213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

```

atgtcgttgc taatcgcgac gccgagatg ctgaccacgg cggcaacgga tttggcgaaa 60
attggttcga cgatcactgc ggccaacacc gcagcgggcg cggtgggcga agtgctgccc 120
gcgtcagccg acgaggtgtc ggtggccggt gcggcggtgt tcggcacgca cgcacaggaa 180
65 tatcagaccg tcagcgccca agtgggcgacg tttcatgacc ggttcgtgca gacctgtgcc 240
cgggcccgga gctcgtacgt cggcgccgag gcggtcaacg ttgaacagag tttgctagcc 300
gcgggtcaat gcgccaccca ggcgctgttc ggacgcccgc tgatcggcaa cggcgccgac 360

```

5 ggctcccccg ggaccggggca gggcggcggg ccaggcgggca tcttggtacgg caacggcgggc 420  
 aacggcggggt ctggggcgccg aggaacaacga ggcggggcgcc gggcctaatac 480  
 ggtaacggcg gcaacgggtgg agcggcgggc gtgggtacca cggcgggggc cgggtggtcac 540  
 ggcggcgccg gcgggtggct gtatggcaac ggaggcgccg ggggttttgg cggggccggg 600  
 gcggtcggcg gcaacggcggg ggcggcggtt accgcccggg tgttcgggtgt cggcgggggcc 660  
 ggtggggcgg gaggcaacgg catcgccggt gtacgggta cgtcgggccag cacacgggt 720  
 ggatccggca ccgctggcggg ggcggcggtt atcggggca acggcgggggc cggcgggggcc 780  
 ggcgggggtgc tgatgggcaa cggcgggcaac ggcggggccg gcggcgaggg cggggcccgcc 840  
 ggcggcgggcg gtgcggggcg cagcgggcgcc caccgccaac acttggggcg tgacgggtcaa 900  
 10 gccggcgga aacggcgga tgggtggggt agcgggaccg gcggggtcgg cggggcccgcc 960  
 ggcggccacg gtctgctcgg cctcgggggc agccacggcg cggcgggggc tggcggttagc 1020  
 ggcggtgacg gcggagctcc cgggtgacggc ggcaacggcg ctaccggggc gtgggggtcac 1080  
 aaccttgggt ccggcggggac cgggtggcaat ggcggcaaac cgggcgcggg tggggccgggt 1140  
 15 ggcgcggcg gtgcggggcg cggcgggcgcc cggcgaccgg cggcgccggc gcccggcac 1200  
 acctccacca gcgggtggtaa cggcgggcgac ggcggcaaac gcggcgacgc tatcagcagc 1260  
 ggacagaccg gcgcgaacgg tggcaggggt ggcgacggcg gtccaggtggg taatggcggt 1320  
 gccggtgggg ccgggtggccg cggcgggggcc ggcgggtctcg gatttggatc cgaagcgccc 1380  
 ggtcgccccc gcggggcgccg cggcaccggc gggcgccggc gcaacggcgg aactcaggcc 1440  
 20 ggtgacggcg gcaccggagg tgctggcggg ggcggcgccg atggcggtac cggaggtgct 1500  
 ggcagcatcg gcttcaatgc gtccgctccc gggggccgag gctcaccggc cgggaatggc 1560  
 ggtaacgggt ggcctggcg agcggcgggc gagggcgggg ccggcggtct cgcgttggcc 1620  
 gcctcgccgc gcaacggcg tccgggtgac ggcgggtgac gcggagccgg cgggaacggc 1680  
 gggactcctg gcaacggcg tccggcgcc gccggcgccg tgggtgtcaa cgggtggtgta 1740  
 ggtgcgcccg gtggccacgg cgggtgatcc ggtgtcgcg gtgcccggcg ccaggggcga 1800  
 25 agcggtccca ccccggtgct caacggcgca cccggcaaca ccccaccag cggcggaac 1860  
 ggcggcgaac gcggcgaggg cggcggttgc accggcttgc gccagaccgg cgcgtccggc 1920  
 ggcagggggc gtgatggcg tttggtcgcc aacggcgccg ccggcgccgc cggcggaac 1980  
 ggcagcaaac gcctgcccgg tctgggcagg ctccggcaacc ccggcctgga tggcggcacc 2040  
 ggcggaacgg gtggggcgccg tggatccggc ggcgcctggg cgggcaacgg tggcacggc 2100  
 30 ggcggcgccg gcggcgccg cgtcgcggg accggaggtt cgggagcga cgggtgtcaa 2160  
 ggttccagcg cgggcgcgga cgggcacccc ggcggcaccc gggagttgg cggtagccggc 2220  
 ggaaaagggt gggacggcg ggacggcggg gccgcaccca acggcgctcg cggcagccaa 2280  
 ggcggcgccg gtgcccggcg cgacgggtgg accggcgagg tggcggttaa cggcgccgc 2340  
 35 ggcggcgccg gaaagggcg ccgagggcg accggcgggc cgggcggggc cgggcggcg 2400  
 ggcacaaacc gcagccaagg cgcggcgggc aacggcggca gcggcgggc cggcggggac 2460  
 cccggtgacg gcggcaacgg cgctaaccgg agcgtgttca ccaacaacgg catcgcggc 2520  
 aacggcgcca acggcggaag cgcggggccc agcggggcg gccggagtgg cggcgccggc 2580  
 40 tccactttcg gtgcgaccgg ctcaagcagc agcattcatg tcaacggcg ccaacggcg 2640  
 aacggcgcca acggcgacca tgccctcagc ggcaacggcg cggcgggcg caacggcg 2700  
 aacggcgcca acggcagcct gcggcgagc ggtggggccg ggcggccacg cggcaacggc 2760  
 ggcattggca gcggcgccat ggcgggaacc gtggcgccg cggaaacggc 2820  
 gggcagattg gcaacggcg agcggcgggc aatggcgagg acggcgggc cggtagtgac 2880  
 45 ggcaatcccg gagccattac cggcagcgcc ggcggcgggc gcgacggcg cgtaggcggg 3000  
 caaggtggga gcgtcgccgg cgacggcgct gacggcgggc gggcgggggc cggcggaacg 3060  
 ggcggcgccg gctcgcggg caccacggc gccaccggt cgaccggcac attcgacgct 3120  
 ggcggcgacc gtacggcggg taacgggtgg accggcgggg tggcggggac cggcgggcg 3180  
 ggcggcgccg gcggcaacgg cggggcgggc ggcaaaagcg tgcggccaac gggcaacaac 3240  
 ggcagccaag gcggcgggcg agatgggtgg gccgggtggc ccggcgggc cggcgggcac 3300  
 50 ggcggcgacc gcggcgaggg tgcccacggc actctcttca gcagcctcg tggcactggc 3360  
 gggactggcg gaaatggcg caccggcggc accggcggca cgggtggtgc cggcggtgac 3420  
 ggcgggaccg gttccaccct gggcgcgacc ggtcgacag ggcggcgccg ccgcgccgg 3480  
 aacgggtggc tggcgggcag tggcggcctt ggtccgcct ttggccccc cggcacccgc 3540  
 55 ggcattggcg gcggcgccg caccagcacc gtcagcgcc gcgggtgacg cggaaagggc 3600  
 ggtggcgacc gcttcaggac cgtggggcg ggcggcgagg gtggggacg cggcaaaagg 3660  
 gccgacccc gcgggtttatt cccgatccct ggggctggcg gtaaggggtg caccgggtgg 3720  
 accggcgcca ccgcacacct cgggccctg gccatcatg gccaatccg ccagcccgcc 3780  
 60 cagttcgga gcccggcg cgacggcgcc ggcggggccg gggcgcgagg cggggggcg 3840  
 ggcggcgccg gcagcttcta g 3900  
 3921

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3921

SequenceName : SEQ ID 523

SequenceDescription :

65

Sequence

-----

```

<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
5  atgtcggcgccg ccgcgggtcgc ctggggaccaa ctggcgatgg aattgggcctc ggcagcgggcc 60
   tctttcaact ccgtgacgtc gggcctgggtc ggcgaatcgt ggctcggacc gtcacgcggcg 120
   gcgatggccg ctgcggtagc gccgtaccta ggtgggcttg ccgcggcagc ggccagggcc 180
   cagcgggtcgg caacccaagc cgcggccctc gtggccgagt tcgaggctgt ccgggcgggc 240
   atgggtgcaac cggcgctgggt ggccggccaac cgtcccgacc tgggtgtcatt ggtgttctca 300
   aacttctctg ggcagaatgc tccggcgatc gctgcgattg aggcgcgata cgaacagatg 360
   tgggcccagc atgtgtcggg gatgtcggcc taccatgccg gggcatcggc ggtggcgctg 420
10  gccctgacgc cgttcaactgc gccgcgcgag aatctgacag acctgcccgc ccagttggcg 480
   gccgtcccg cggccgtcgt caccgcggcg atcaccagtt ccaagggtgt gctggcaaat 540
   cttagcttag gccctggcaaa ctccgggcttc ggacagatgg gcgcgcgtaa ccttggcatt 600
   ttgaacttgg ccgtcgctaaa tcccgccgcg gccctggaaa tgtcggcagc 660
   aacaacgttg gcttgggcaa caccgggcaac ggaaacatcg gcttcggcga caccgggcaac 720
15  ggaaacatcg gcttcggcct caccggcgac aaccagcagg ggttcggcgg ctggaactcg 780
   gggaccggga atatcggctt gttcaactca ggcaccggca acatcggcat cggcaatacg 840
   ggcaccggag cactcggcat cgggaactca acaacacggg tatcggcaac 900
   acggggccaag ccaacacggg cttcttcaac gccggcatcg ccaacactgg catcggcaac 960
   acggggcaact acaacacggg cagcttcaat ctaggcagct tcaacacggg cgacttcaac 1020
20  acggggcagct ccaacacagg cttcttcaac cccggcaacc tcaacacggg cgtgggaaac 1080
   accggcaacg tcacacacgg tggattcaac cctggcaact acagcaacgg cttcttctgg 1140
   cgaggcgact accagggtt gatcggcttc tccggcacac tgaccattcc cgctgctggc 1200
   ctagacctca accgcctcgg ctccgtcggc cccatcacca tcccgctccat caccattccc 1260
   gaaatcggcc tgggcattaa cagttccgga gcgttgggtg ggccgatcaa tgttcgcct 1320
25  attactgttc cgtgggcatc gctgggcatc aacgttaccc gggcactcgt tggcccatc 1380
   aacatcccg cgtactctct aaattctatt ggcctagagc tatcggcggt ccaggtcatt 1440
   aacgtgggat cgatttogat cccgcgctct ccgcttgcga tcggcttatt cggcgtaaat 1500
   cccaccgttg gcagcatagg cccgggtagc atatcgatac agctaggcac tcctgagatt 1560
   ccgcgatttc ccacattttt ccccggtatc cctccagatt acgtgacagt gagtgtgcaa 1620
30  atcgggtccca tcaccttctt atcgggtggg tatatgttgc cggctattcc gttgggtatt 1680
   gatgtgggtg gagggttagg cccgtttacg gtgttcccgg atggctactc acttccggca 1740
   atcccgttgg gtattgatgt gggcggaggg ttaggcccggt tacagggtgt cccggatggc 1800
   tactcacttc cggcaatccc gttgggtatt gatgtggcg gagggttagg cccgtttacg 1860
   gtgttcccgg atggctactc acttccggca atcccgttgg gtattgatgt gggcggcgcc 1920
35  atcggccccc tactacccc gccaatcacg atcccctcaa tcccgttggg catcgacgtg 1980
   tccggcagcc tcggggcgat caacatccc atcgaaatcg cgggcacccc aggttcgga 2040
   aactccttca cccacccgtc atcgggcttc ggcacagcg gtacggcgcg cacatcgggt 2100
   ttccgggaacg tcggttcggg cggatctggc ttctggaaca ttgctgggaa tctcggcaac 2160
   tccggattcc ttaacgtcgg gccactgaca tcgggaatct tgaacttcgg caacacagtc 2220
40  tcaggcctct acaacaccag cacgctgggc ctagcgacat cggcctttca ctccggcgtc 2280
   ggttaacacc cagcaatccc cgcgggcttc ccgaggtgg gacgttattc 2340
   aacttcgggt tcgccaacga cggcacactc aacttgggca acgcaaacct cggcgactac 2400
   aacgtgggta gcggaacgt cggtagctac aacttcgggt tggaacacgt cggcagcaac 2460
   agtttcgggt tcggaacat cgggaagcaac aacttcgggt ttggaacacgt cggcagcaac 2520
45  aaccttgggt ttgcaaacac ggttcgggg ctacggcttc gcgaacatcg gtaacggcaa catcggcttc 2580
   gggaacatcg gcggcaacaa ctacggcttc ggcgaacatg ggcgaacatc cggcaacatc 2640
   ggcaacacgg gactggaaa tattggtatc gggctcaccc gcgacaatca ggtcggattc 2700
   ggggcgctga actccggcag cggcaacatc ggccttcttca actccggcaa cggcaacatc 2760
   ggcttcttca actcaggcaa cggaaacgtc ggcacggca actccggcaa ctacaacacc 2820
50  ggcttgggta acgtgggcaa cgccaacacg ggcctgttca acacgggcaa cgtcaacact 2880
   ggaatcggca acgcaggaag ctacaacaca ggcagctaca acgcccggca caccaacacg 2940
   ggcgacctca acccgggcaa cgccaacacg gggtaacctaa acctcggcga cctcaacacc 3000
   ggcgtgggaa acattggcga ccttaacacc ggcgcctga tctcggcgag ctacagcaac 3060
   ggcatactgt ggaggggaga ttaccagggt ctgattggct actcagacac actcagcatt 3120
55  cccgcctacc cactgagcgt cgaagtgaat ggtggcatcg gtccgattgt ggtgcccggat 3180
   attactatcc ctggtattcc gttgagcctg aacgcgctgg gtggtgtcgg tccgattgtg 3240
   gtgcccggata ttactattcc tggatttccg ttgagcctga acgcgctggg tgggtgtcgg 3300
   ccgattgtgg tcgggatat tactatttcc ggtattccgt tgagcctgaa cgcgctgggt 3360
   ggtgtcggtc cgattgtggt gccggatatt actattcctg gtattccgtt gaggcctgaa 3420
60  gcgctgggtg gtgtcgggtc gattgtggtg cctgatatta ctattcctgg tattccgttg 3480
   agcctgaacg cgttgggtgg tgtcggctcg atcacgcttc ccggcgctcc tatttccgcg 3540
   atccccctta cgattaacat caggataccg gtcaacatca ctctcaacga acttccgttt 3600
   aacgtcgtcg gtatcttcac gggctacatc ggcgccatcc cgcttagcac attcgtatta 3660
   ggcgtcacgc tggccggcggt caccctggag tctggcatcc agggattcag tgttaatccg 3720
65  ttcggtttga atattccgct gagcgggtgt acctaacgctg tcacgatccc tgggttcggc 3780
   attaatccgt ttgggttgaa tgttccgttg agcgggggca cgagcccggt tacgatccct 3840
   ggttttcgca ttaatccgtt tgggttgaa gttccgttga gcgggggcac gagcccggtt 3900

```

acgatccccg gcttcacccat tccccgatcc cccctgaact tgaccgcgcaa cggcggtttg 3960  
 ggaccgatca acatccccgat caacatcacg agcgccccgg gcttcggaaa ctccaccacc 4020  
 accccgtctt cgggcttctt caacagtggc gatggaagcg catccggctt cggcaacgtc 4080  
 gggcccgcca tttccggcct ctggaaccag gtgccaagcg cgctgcaagg cggagtctcg 4140  
 5 ggaatctaca acgtcgggca gctggcgctg ggcgtggcga acctaggcaa caccgtctcg 4200  
 ggcttcaaca acacgagcac cgttgggtcac ctcaccgctg cgtttaactc gggcgtaaac 4260  
 aacatcggcc aaatgctcct gggcttcttc tcaccgggtg ccgggcccga a 4311  
  
 <212> Type : DNA  
 10 <211> Length : 4311  
 SequenceName : SEQ ID 524  
 SequenceDescription :  
  
 Sequence  
 -----  
 15 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :  
 atggagtttc cgggtgttgc accggaaatc aactccgtgc tgatgtattc ggggtgcgggg 60  
 tcgagcccggt tgctggcggc ggccgcggcg tgggatgggc tggctgagga gttgggggtcg 120  
 20 gcggcggtgt cgtttgggca ggtgacgtcg ggcctgacgg cggggggtgtg gcagggtgcg 180  
 gcggcgcgcg cgatggcggc cgcggcggcg ccgtatgcgg ggtggttggg ttcgggtggcg 240  
 gccgcggcgg aggcggtggc cgggcaggcg cgggtggtgg tgggggtctt tgaggcggcg 300  
 ttggcggcga cgggtgatcc ggcgtggtg gcggccaacc gggcgcggtt ggtggcggtg 360  
 gcgggtgtcga atctgttggg gcagaacacg ccggcgatcg cggccgcgca ggcgagtagc 420  
 25 gagnetgatgt gggccgcgca tgtggcggcg atggccggct accattccgg cgcgtcggct 480  
 gctgcgcggc cgttgcggcg gttcagccca ccggcgaggc cgctgggggg aggtgtcggc 540  
 gcgttcctta ccgcctgtt cgcagccct gcgaaggcgc tgagcctgaa tgcgggtttg 600  
 ggcaatgtcg gcaattacaa cgtcgggttg ggcaatgtcg ggtgtgtcaa cctggcgcg 660  
 30 ggcaatgttg gtgggcagaa tctgggtttc gggaatgccg gtggcaccaa tgtcgggttc 720  
 ggcaacctcg gtaacgggaa tctcgggttc gccaactccg gtctgggggg cggcctggcc 780  
 ggcttgggca atatcgggtt gggcaatgca ggcagcagca actatggttt cgcaaacctg 840  
 ggtgtgggca acatcgggtt cggcaacacc ggcaccaaca acgtcggcgt cgggctcacc 900  
 ggcaaccacc tgacgggtat cgggggcctg aattcgggca ccgggaatat cgggttgttc 960  
 aactccggca ccgggaatgt ggggttcttc aattcgggga ccgggaactt cggggtgttc 1020  
 35 aactcgggta attacaacac cgggtgtcgg aatgcgggga cggccagcac ggggttgttc 1080  
 aatgccggca atttcaacac cggcgtggtg aacgtgggca gttacaacac cggcagtttc 1140  
 aacgccggcg acaccaacac cgggtggctc aaccccgcg gtgtgaacac cggctggctg 1200  
 aacacgggca acaccaacac cggcatcgcc aactcgggca acgtcaacac cggcgcgttc 1260  
 atctcgggca acttcaacaa cggcgtgctg tgggtgggtg actaccaggg cctgttcggc 1320  
 40 gtctccgccc gctcgtcgat ccccgcaatt cccatcggcc tgggtgtcaa cggcgacatc 1380  
 ggcccgatca ccatccagcc catcccgat ctgcccacca tcccgtcag cattaccaa 1440  
 accgtcaact tgggcccgtt ggtggttccc ggcctgtgac tcccgcctt cggcgcggtt 1500  
 atcggcatac ccatcaacat cggcccgtcg accatcacac ccataccct gtttgccaa 1560  
 cagacatttg tcaaccaatt gccctttccc accttcagtt tagggaaaat cacaattcca 1620  
 45 caaatccaaa cctttgatc taacgggtcag ctgttcagct ttatcggccc tatcgttatc 1680  
 gacaccacca tcccggacc caccaatcca cagattgatt taacgatcag atgggatacc 1740  
 cctccgatca cgctgttccc gaatggcatc agtgcctccc ataatocttt ggggttgctg 1800  
 gtgagtgtgt cgatcagtaa ccggggcttt accatcccgg gatttagtgt tcccgcgag 1860  
 ccgttgccgt tgtcgatcga tatcgagggc cagatcgacg ggttcagcac cccgccgatc 1920  
 50 acgatcgatc gcataccccc gaccgtgggg ggcgggggtca cgatcggccc catcacgatc 1980  
 cagggccttc atatccgggc ggcgcgggga gtggggaaca ccaccacggc ccgctcgtcg 2040  
 ggattcttca actccgggtg ggggtgggggtg tgggttttcg gcaacgtcgg cgcgggcagc 2100  
 tcgggctggg ggaaccaggc gccgagcgcg ctggtggggg ccggttcggg tgttggcaac 2160  
 gtgggcaacc tgggctcggg tgtgctcaac ctgggctcag ggtctcggg gttctacaac 2220  
 55 accagcgtgt tgcctttcgg gacacggcg gcggtgtcgg gcacggcaa cctgggccag 2280  
 cagctgtcgg ggggtgtcgg gcggggaacc acgctgcgct cgatgctcgc cggcaacctc 2340  
 gggttggcca atgtgggcaa cttcaacacc ggggttcggaa atgtcgggga cgtcaacctg 2400  
 ggtgcggcca acatcgggtg gcacaacctg ggcctgggca atgtcgggga cggcaacctg 2460  
 gggttgggca acatcggcca tggcaacctg gggtttgcca acttgggcct gaccgcggc 2520  
 60 gcggcggggg tgggcaatgt tgggttttgg aatgcccgca tcaacaacta tggcttggcg 2580  
 aacatgggtg tgggcaatat tgggttttgc aacaccggca cgggcaacat cgggatcggg 2640  
 ctggtcgggg accatcggac cgggatcggg cggctgaact ccggcatcgg caatatcggg 2700  
 ttgttcaact ccggcaccgg caacgtcggg ttcttcaatt ccgggaccgg caacttcggc 2760  
 atcgggaact ccggccgctt caacaccggg atcggtaata gcggaaacgg cagcacggcg 2820  
 65 ctcttcaatg ccggcagctt cagcaccggc atcgccaaca ctggtgacta caacacgggc 2880  
 agcttcaacg ccggcgacac caacaccggg cgggtcaacc cggcgcgcat caacaccggc 2940  
 tggttcaaca ccgggcatgc caacaccggg ttggccaacg cgggcacctt cggcacgggc 3000

	gccttcatga	cgggcgacta	cagcaacggc	ctgttgtggc	ggggcggtta	cgagggcctg	3060
	gtcggcgctc	cgctcggggc	cacgatctcc	caattcccgg	tcaccgtgca	cgcgatcggc	3120
	gggggtggcc	cgctgcatgt	ggcgcccgtc	ccggtacccg	ccgtgcacgt	cgagatcacc	3180
	gacgccaccg	tcggcctggg	tcggttcacc	gtcccaccga	tcagcattcc	ctcacttccc	3240
5	atcgccagca	tcaccggaag	cggtggacct	ggcgcaaaac	ccatctcgcc	gattcgcgct	3300
	cttgaccgcg	tcggcgggtt	gatagggctt	tttctcgagc	cgttccgcct	cagtgaacca	3360
	tttatcacca	ttgatgcgtt	ccaagttgtt	ggcgggtgct	tgttccctaga	gaacatcatt	3420
	gtgcccggcc	tcacgggttag	cggtcagata	ttgggtcacc	cgacaccaat	tccccaaacc	3480
	ctcaacttgg	acaccacccc	gtggacgctt	ttcccgaatg	gtttcaccat	tcccgcgcaa	3540
10	accccgcgtg	acgtgggtat	ggaggtcgct	aacacgggtt	tcaccttctt	cccgggtggg	3600
	ctgacctttc	cgcggggcct	cgcgggggtc	accggactgt	ccgtggggct	ggacgcgttc	3660
	acgctgttgc	ccgacggggt	caccctcgac	accgtgcccg	cgaccttcga	cggcaccatc	3720
	ctcatcggcg	atatcccgat	cccgatcacc	gatgtgcccg	cggtgcccgg	gttcggcaac	3780
	accaccggcg	cccacgtgtc	ggggttcttc	ggggcggcg	gcggcggtgg	atcgggggtt	3840
15	gccaacgtcg	gcgccggcac	gtcgggctgg	tggaaccagg	ggcacgacgt	gttagcaggg	3900
	gcgggctcgg	gagttgccaa	tgccggcacg	ctgagctcgg	gcgtgctgaa	cgtcggctcg	3960
	gggatctccg	gggtgtacaa	caccagcacc	ctgggagcgg	gcaccccggc	gggtgtctcg	4020
	ggcatcggca	acctcggcca	gcagctgtcg	gggttcttgg	caaattgggac	cgtgctcaac	4080
	cggagcccca	ttgtcaatat	cgggtggggc	gatgtggggc	cgttcaacac	cgggttgggc	4140
20	aatgtggggg	acctaactg	gggtgcccgc	aacatcggcg	cgcagaacct	gggcctgggc	4200
	aatctcggca	gcgggaaact	cgggttcggc	aacatcgggt	ccggcaacgt	cgggttcggc	4260
	aactcggcgc	cgtcgtgggg	ctggccggcg	tcgggttgag	tggggttgag	caatgcgggc	4320
	agcaacaact	gggggctggc	caacctgggt	gtgggcaaca	tcgggttggc	caacacgggc	4380
	acgggcaaca	tcgggatcgg	gtgggtcggc	gactaccaga	ccggcatcgg	cggcctcaac	4440
25	tcgggtagt	gcaatatcgg	attgttcaat	tcgggcaccg	gcaatgtcgg	gttcttcaac	4500
	accggcaccg	ccaacttcgg	actgttcaac	tcgggtagt	tcacacaccg	catcggtaat	4560
	agcggaaacc	gcagtaactg	gtcttcaat	gcgggcaatt	tcacacaccg	catcgccaac	4620
	cccggtcgt	acaacacggg	caacttcaat	gtcgttgata	ccaacacacc	tggtttcaac	4680
	ccggggcaca	tcacacaccg	ctgggtcaac	accggcatta	tgaatacggg	caccgcgaac	4740
30	accggccccc	tcagtgcggg	gaccgacagc	gacgcatacg	tgtggcgccg	cgaccacgag	4800
	ggcctgttcg	gcctgtccta	tgccatcacg	atcccgaat	tcgggatccg	catcaccacg	4860
	actggcggtg	tcggccccc	cgtcatcccg	gacaccacga	tccttccgcc	gctgcacctg	4920
	cagatcaccc	gcgacgcggg	ctacagcttc	accgtgcccg	acatccccat	ccccgccatc	4980
	cacatcggtg	ccaacttcgg	cgtcacccgc	ggcttcaacc	ccccggaagc	cacctgctg	5040
35	tcggccctga	agaataacgg	tagcttcatc	agcttcggcc	ccatcacgct	ctcgaatatc	5100
	gatattccgc	ccatggattt	cacgttaggc	ctgcccgttc	ttgggtcctat	cacgggcaaa	5160
	ctcggaccaa	ttcatcttga	gccaatcgtg	gtggccggga	tcgggtgtgc	cctggagatc	5220
	gagcccatcc	ccaacttcgg	gatttcgttg	agttagtcga	ttcctatccg	cataacctgt	5280
40	gatattccgg	cctcgggtcat	cagatcacca	ggcaccacca	tttcgcgat	cccgtggggc	5340
	ttcgacattc	gcaccagtgc	cggacccctc	aacatcccga	tcacgcacat	cccggcggcg	5400
	ccgggcttcg	ccaacttcgg	tcgtcgggtt	tcgtcgggtt	tcctcaacac	cgggtgcggc	5460
	ggcggatcgg	gcacgcggca	cctgggtgcg	ggcgtgtcgg	gcctgctcaa	ccaggccggc	5520
	gcgggggtcac	tggtggggac	actctcgggg	ctgggcaatg	ccggcaccct	ggcctcgggt	5580
45	gtgctgaact	ccggcaccgc	catctcgggg	ctgttcaacc	tgagcacgct	ggacgccacc	5640
	accgccggcg	gttcagcaac	ctcggcgacc	atatgtcggg	gtgtgtccat	gggtgtccat	5700
	gatggcctga	tcgggatcct	caacttccca	cctgcggagt	ccgtgttcga	tcagatcatc	5760
	gacgcggcca	tcggcgagct	gcagcacctc	gacatcggca	acgttttggc	cctgggcaat	5820
	gtcggcgggg	tgaacctcgg	tttggttaac	gtcgggtgag	tcacacctgg	tgccgggcaac	5880
50	gtcggcaaca	tcaacttcgg	cgcgggcaac	ctcggcgcca	gcaacttggg	gttgggcaac	5940
	gtcgggaccg	gcaacctcgg	gttcggcaac	atcgggtcgg	gcaatttcgg	attcggcaac	6000
	gcggggcctga	ccgcggggcg	ggggggcctg	ggcaatgtgg	ggttgggtta	cgccggcagc	6060
	ggcagctggg	gggttggccaa	cgtgggtgtg	ggcaatatcg	gggttggccaa	caccggcacc	6120
	ggcaacatcg	ggaatcgggt	gaccggggac	tatcgggacc	ggatcggcg	cctgaactcg	6180
55	ggcaccggga	acctcgggtt	gttcaactcg	ggcaccggca	acatcgggtt	cctcaacacc	6240
	gggaccggga	acttcgggtt	gttcaactcg	ggcagttaca	gcaccgggtt	ggggaatgct	6300
	ggcaccggga	gcaccgggtt	gttcaactcg	gggaacttca	acaccgggtt	ggccaatgct	6360
	ggctcctaca	acaccggcag	cctcaactcg	ggcagcttca	acaccggcg	cgtcaacacc	6420
	ggcaccgtca	acaccggcgt	gttcaacacc	ggccacacca	acaccggcct	gttcaacacc	6480
60	ggcaacgtca	acaccggcgc	gttcaactcc	ggcagcttca	acaacggggc	gctgtggacc	6540
	ggtgactacc	acgggctggt	cggcttctcc	ttcagcatcg	acatcgccgg	cagcaccctg	6600
	ctggacctca	acgaaacctc	caacctgggc	cccatccaca	tcgagcagat	cgacatcccc	6660
	ggcatgtcgc	tggttcgagct	ccacgaaatc	gtcagatcg	gaccttcac	catcccgag	6720
	gtcgatgttc	ccgcgatacc	gctagagatc	cacgaatcga	tcacatgga	tcccatcgct	6780
65	ctgggtgccg	ccaccacaat	tcccgcacag	acgagaacca	ttccgctgga	catccccggc	6840
	tcaccgggtg	ccaccatgac	gattcccgct	atcagcatgc	gcttcgaagg	cgaggactgg	6900
	atcctcgggt	cgaccggggc	gattcccaat	ttcggagacc	ccttcccggc	gcccaccag	6960
							7020

	ggcatcacca	ttcacaccgg	ccctggcccc	ggaacgaccg	gcgagctcaa	gatatctatt	7080
	ccgggttttcg	agattccgca	aatcgctacc	acgagattcc	tggtggacgt	gaacatcagc	7140
	gggtggtctgc	cggccttcac	cttggttcgcg	gggtggcctga	cgatccccac	gaacgccatc	7200
	ccgttaacga	tcgatgcgtc	cggcgcgctg	gatccgatca	cgattttccc	gggtgggtac	7260
5	acgatcgacc	cgctgcgctc	gcacctggcg	ctgaatctca	ccgtgcccga	cagcagcatc	7320
	ccgatcatcg	atgtcccgc	gacgccaggg	ttcgccaaca	ccacggcgac	cccgtcgctg	7380
	gggttcttca	actccggcgc	cgggtgggggtg	tcgggggttcg	gaaacgtcgg	gtcgaacctg	7440
	tcgggctggt	ggaaccaggc	ggcgagcgcg	ctggcggggt	cgggatcggg	gggtgtgaat	7500
	gtcggcacgtc	tggtgctggg	tgtgctcaac	gtcggctcgg	gtgtctcggg	gatctacaac	7560
10	accagcgtgt	tggcgctcgg	gacgcggcg	gtgctgtcgg	gcctcggcaa	cgctcgccat	7620
	cagctgtcgg	gcgtgtctgc	ggcggggacc	gcgttgaacc	agatccccat	cctcaacatc	7680
	gggttgggcg	atgtgggcaa	cttcaacgtc	gggttcggca	acgtcgggga	cgttaacctg	7740
	ggcgcgggca	acctcgggtg	gcaaaacctg	gggtcgggca	acgtcgggcac	cggcaacctc	7800
	tgcttcggca	ccgtcggcca	cggcaatatc	atctcgggca	atctcgggtc	gaccgcggcg	7860
15	cgggcgggcc	tggtgcaaac	gggttctggc	aatgcccggc	gcgccaacta	tggtttcgcc	7920
	aaccagggcg	tgcgcaacat	cgggttgggc	aacaccggca	ccggcaacat	cggtgatcggg	7980
	ctggtggggg	acaacctcac	cggcatcggg	ggcctgaact	ccggtgcccg	caatatcggc	8040
	ttggttcaact	ccggcacccg	caacatcggg	ttcttcaact	ccgggaccgg	caacttcggc	8100
	atcggtaact	cgggcagctt	caacaccggc	atcggcaata	gcggaacggg	cagcactggg	8160
20	ctcttcaatg	ccggcagctt	caacaccggc	gtggccaacg	ccggcagcta	caacaccggc	8220
	agcttcaatg	ccggcgacac	caacaccggg	gggttcaacc	cgggcacccat	caacaccggc	8280
	tggttcaaca	ccggcgacac	caataccggc	atccgcaact	cgggcaacgt	cggcacggcg	8340
	gcgttcatgt	ccgggcaactt	cagcaaccggc	ctgttctggc	gggttgatca	cgagggcctg	8400
	ttcagcctgt	tctacagcct	cagcgtgccc	cggatcacca	tcgtggacgc	ccacctcgac	8460
25	ggcggttctg	gacccgtggt	cctcccgccc	atcccggtgc	cggccgttaa	tgccgacctg	8520
	accggaaaacg	tcggcgatgg	cgcattcaac	atccgcaga	tcgacatccc	cgcactcacc	8580
	ccaaacatca	ccggaagcgc	cgccttccgc	atcgttgtgg	ggtccgtgcg	cattccgccc	8640
	gtgagtgtca	ttgtggagca	aataatcaac	gcctcggttg	ggcgaggat	gaggatagat	8700
	cccttcgaaa	tgtggactca	aggcaactat	ggccttggtt	taaccttcta	ttcattcgga	8760
30	tcggccgacg	gttccgccca	cggcaaccgg	ccactcgttt	tcggcgccgg	cacgagcgac	8820
	ggaagccatc	tcaccatttc	cgcgtccagc	ggggcggtta	ccactccgca	gctcgaaact	8880
	ggcccgatca	cgttgggctt	ccaggtgccc	ggcagcgtca	acgcgatcac	cctcttcccc	8940
	gggtggttga	cgttcccggc	gacctcgctg	ctgaacctgg	acgtgaccgc	cggcgccggc	9000
	ggcgtggaca	tcggcgccat	cacctggccc	gagatcgcgc	cgagcgccga	cggctcgggt	9060
35	tatgtcctcg	ccagcagcat	cccgtgtatc	aacatcccgc	ccaccccggg	cattgggaac	9120
	agcaccatca	ccccgtcgtc	gggcttcttc	aacgcggcg	cggcgggggg	atcgggcttc	9180
	ggcaacttcg	gcgcggggac	ctcgggcttg	tggaaccagg	cgcacaccgc	gctggcgggg	9240
	aatgttcggg	gtttcgccca	cgttggcacg	ctgctatccg	gtgtgctcaa	cctgggctcg	9300
	gggtgtctcg	ggatctacaa	caccagcacg	ctgggggttg	ggaccccggc	gctgggtctca	9360
40	ggcctgggca	acgtcggcca	ccaactgtcg	gggctgcttt	ccggcgggtc	cgcgggtgaac	9420
	ccggtgaccg	ttctgaatat	cgggttgggc	aacgtcggca	gccacaacgc	cggtttcggc	9480
	aatgttcggg	aggtcaacct	ggcgcgggcc	aactcggcg	cgcacaacct	gggcttcgga	9540
	aatatcggcg	ccggcaacct	gggggttcggc	aatattggcc	acggcaatgt	cggagtccgg	9600
	aactcgggtc	tgaccgcggg	cgtgcggggc	ctgggcaatg	tggggttggg	caatgcccgg	9660
45	ggcaacaact	gggggttggc	caacgtgggc	gtgggcaata	tcgggttggc	caacaccggc	9720
	accggcaaca	ttgggatcgg	gctgaaccgg	gactaccaga	ccggcatcgg	cggcctaaat	9780
	tcgggtgccc	gcaacctggg	gttgttcaac	tcggcgcccg	gcaacgtcgg	gttcttcaac	9840
	accgggaccg	gcaacttcgg	gttgttcaac	tcggcgagct	tcaacaccgg	cgtcggcaat	9900
	agcggaaacg	gcagcactgg	gctcttcaat	gcgggcagtt	tcaacaccgg	tgtggccaac	9960
50	gccggcagct	acaacaccgg	cagcttcaat	gtcgggtgaca	ccaacaccgg	gggcttcaac	10020
	ccgggcagca	tcaacaccgg	ctggctcaac	gccggcaacg	ccaacaccgg	ggtggccaac	10080
	gcgggcaatg	tcaacaccgg	cgccttcgtc	accggcaact	tcagcaacgg	catcctgtgg	10140
	cgcggcgact	accagggcct	ggcgggcttc	gcggtgggct	acaccctccc	gctgttcccc	10200
	gcgggtggcg	ccgacgtcag	cggcggggac	ggcccgatta	ccgtgctgcc	gccccatcac	10260
55	atcccgccca	ttccggtcgg	cttcgcccgc	gtcgggtggc	tcggcccgat	cggcatcccc	10320
	gacatctctg	ttccatccat	tacttggggc	ctcgaccocg	ccgtccatgt	cggctccatc	10380
	accgtcaacc	ccattaccgt	caggaccccc	cccgtgctcg	tcagttactc	ccaaggagcc	10440
	gtcaaccagca	cgtccggacc	aacctcagag	atttgggtca	agcccagctt	cttcccggga	10500
	atccggatcg	cgccctctag	cggcgggggg	gcaacgtcca	cgcaaggggc	atactttgtg	10560
60	gggcccattc	ccatcccttc	cggcacgggtg	accttcccgg	gattcaccat	ccccctcgac	10620
	ccgatcgaca	tcggcctgcc	gggtgcgctg	accatcccgg	ggttcaccat	ccccggcggc	10680
	accctgatcc	ccaccctccc	gctgggcctc	gcgttgtcca	atggcatccc	gcccgtcgac	10740
	atcccgcca	tcgttctcga	ccggatcttg	ctggacctgc	acgcggacac	cactatcggc	10800
	ccgatcaacg	tcccgatcgc	cgggttcggc	ggggcgccgg	gtttcgggaa	ctcgaccacg	10860
65	ctgcccgtcg	cgggcttctt	caacaccgga	gctggcgccg	gttcgggctt	tagcaacacc	10920
	ggcgcgggca	tgtcgggatt	gctcaacgcg	atgtcggatc	cgtgctcgg	gtcggcgctg	10980
	ggcttcggca	acttcggcac	ccagctctcc	ggcatcctca	accgcggcgc	cggcatctcg	11040

ggcgtgtaca acaccggcgc gctgggtgtt gtcaccgcgg ccgtcgtctc gggtttcggc 11100  
aacgtcggcc agcaactgtc gggcttgctc ttcaccgcgg tcggggcccta a 11151

<212> Type : DNA  
5 <211> Length : 11151  
SequenceName : SEQ ID 525  
SequenceDescription :

Sequence  
-----

10 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :

15 ttgaattttc cagttctgcc accggaatc aactccgtgc tgatgtattc ggggtgcgggg 60  
tcgagcccggt tcgtggcgcc gcccgcgccg tgggatgggc tggctgaggga gttgggggtcg 120  
gcgccggtgt cgtttgggca ggtgacgtcg gccctgacgg cgggggtgtg gcagggtgcg 180  
gcgccgcgcc cgatggcgcc cgcggcgccg ccgtatgcgg ggtggttggg ttcggtggcg 240  
gcgccagggc tggcggtggc cgggcaggcg cgggcgcggg tggcgcggtt tgaggcgggc 300  
ttggcgcgga cggtggtacc ggcggcggtg gcggtcaacc ggatggcgat gcggcggtt 360  
gcgatgtcga acctgctggg gcagaacgcc gcagcgatcg cggccgtcga ggccgagtac 420  
gagttgatgt gggccgcgca tgtggcgcg atggcggtc accattccgg cgcgtcggct 480  
gctgcgcggc cgttgccggc gttcagccca cggcgcgagg cgttgggggg tgggtgcggc 540  
gcgttcctca atgctctatt tgccggaccc gcgaagatgt tgaggcttaa cgcgggcttg 600  
ggcaatgtcg gtaattacaa cgtcgggttg ggcaatgtcg ggatattcaa cctgggcgca 660  
gccaatgtcg gtgcgcagaa tttgggtgct gccaacgcgg gtagcgggaa tttcggtttc 720  
25 ggcaatatcg gcaacgcgaa cttcgggttc ggcaactcgg gtcttgggtt gccgcggggc 780  
atgggcaata ttgggttggg caatgcgggc acggcctcgc aaacctgggt 840  
gtgggcaaca tcggttttgc caacacgggt agcaacaaca tcgggatcgg gttgaccggg 900  
gacaacctga ctggcattgg gggcctgaat tcagggaaccg gtaatctggg gttgttcaac 960  
tccggcaacc gcaacattgg gttcttcaat tcggggaccg gcaacttcgg ggtattcaac 1020  
30 tcgggcagct ttagcaaccg tgtcggtaat cgggggacgg ccagtagcgg gttgttcaac 1080  
gttgggtggg tcaacacggg tgtggccaac gtgggtagct ataacacggg cagcttcaac 1140  
gcgggcaaca ccaatacggg tggcttcaac cgggcaaccg tcaacaccgg ctgggtgaac 1200  
accggcaaca ccaacaccgg catcgccaac tcgggcaatg tcaacaccgg cgcgttcac 1260  
tcgggcaact tcagcaaccg tgtgctgtcg acgggtgact acgagggcct gtgggggctc 1320  
35 tccggtggat cgaccattcc ggcgatcccc attggtctcg agctcaacgg cggcgtcggc 1380  
cccatcaccg tgttgcgat ccagattttg cccaccatcc cgtcacaatc tcaccaaac 1440  
ttcagcctcg gcccgctggt cgttccggac atcgtgatcc ccgcttttgg tggcggtacg 1500  
gccataccta ccccgctcgg ccccatcacc atctcgccca tcacctgtt cccggctcag 1560  
aacttcaaca cgactttccc cgtcggcccc ttctttggct tgggggtcgt caacatttca 1620  
40 ggaatcga aa tcaaagatct tgccggcaac gtcaccctcc aattaggtaa ccttaatatc 1680  
gacaccagaa ttaaccagtc attcccgttg accgtcaact ggagtacccc ggcagtaacg 1740  
atcttcccg atctcccaac aatccactgg cgtgctggc cagcgctcg 1800  
atcggaacgc tgggattcac gatcccgggc ttcaccattc ccgctgcgcc gctgcgctg 1860  
acgatcgaca tagacggcca gattgacggc ttcagcacc cgcgatcac gatcgaccg 1920  
45 atcccgtga acctcggcgc cagcgtcact gtcggcccta tcctgatcaa cggcggttaa 1980  
atcccggcga ccccggtctt tggcaacacg accaccgctc cgtcgtcggg tttcttcaac 2040  
tccggcgacg gtgggtgtgc gggcttcggg aatttcggtg cgggcagctc ggggttgggtg 2100  
aaccaggcgc agaccgaggt ggctggggcg ggttcgggtt tcgccaattt cgggttcgctg 2160  
ggatcgggtg tgctgaactt cggctcgggt gtgtcggggc tgtacaacac cggcgggtt 2220  
50 ccgaccggga ccccgcggtt ggtctcgggc atcgcaatg ttggtgagca gctgtcggg 2280  
ttgtcctcg cggggacggc actcaaccag agcctcatca tcaatctcgg gttggccgat 2340  
gtgggcagcg taaacgtcgg tttcggcaac gtcggggact tcaacctggg tgcggccaat 2400  
atcggcgact tgaacgtggg tttgggcaat gtcggcgggc gcaacgtcgg gttcggcaat 2460  
atcggcgatg ccaacttcgg gttgggcaat gcgggtctgg cggcgggcct ggccggggtg 2520  
55 ggcaacatcg ggttgggcaa tgccggcagc ggcaacgtcg gcttcggcaa catgggtgtg 2580  
ggcaacatcg ggttcggtaa caccggcacc aacaacctcg ggattgggct gaccggggac 2640  
aaccagactg ggtcggcgcg cttgaactcc ggtgcccggc acatcgggtt gttcaactcc 2700  
ggcaccggca acgtcgggtt gttcaactcc gggaccggga acttcgggtt gttcaactcg 2760  
ggcagcttca acaccggcat cggcaatggc ggaacgggca gtactgggtt tttcaatgcc 2820  
60 ggtaatttca ataccggtgt ggccaacctt gggctgtaca acacgggcag cttcaatgtg 2880  
ggtgacacca acaccggttg tttcaacctt ggcagcatca acaccggctg gttcaacacc 2940  
ggcaacgcca acaccggcg cgcgaattcg ggcaatgtcg acaccggcg cctcatgtcg 3000  
ggcaacttca ccaacggcat cttgtggcga ggcaacttcg agggcctgtt cggcctgaac 3060  
gtcggcacat cgattccgga attcccgatc cactggactt caaccggcg catcggcccc 3120  
65 attatcatcc cggacaccac gatccttccc cccatccacc tgggcctcac gggacaagcg 3180  
aactacggct tcgccgtgac ggacatcccc attccggcaa tccacatcga cttcgacggt 3240  
gcgcgcgacg ccggcttcac cgcgccggcc accacctgc tttctgcgct gggcattacc 3300

	ggacaattca	ggttcggccc	gatcacccgtc	tcaaacgtcc	agctcaatcc	gttcaacggt	3360
	aacctcaagc	ttcagttcct	ccacgacgcy	ttcccaaatg	aattttccga	tcccacaatc	3420
	tcgggttcaga	tacaggctgc	cataccocctt	acttcggcaa	cgctgggcyg	attggccctg	3480
	ccgctgcagc	agaccatcga	cgccatcgaa	ttgccggcaa	tctcgttcag	ccaatccata	3540
5	cccatcgaca	ttccgcccgt	cgacatcccg	gcctccacta	tcaacggaat	ttcgatgtcg	3600
	gaggtcgtgc	cgatcgatgt	gtccgtcgac	attccggcgg	tcaccatcac	cggcaccagg	3660
	atcgaccoga	ttccgctgaa	cttcgacgtt	ctcagcagcg	ccggacccat	caacatctcg	3720
	atcatcgaca	ttccggcgct	gccgggcttt	ggcaactcga	ccgagctgcc	gtcgtcgggc	3780
	ttcttcaaca	ccggcgggcg	tggcggtctg	ggcatcgcca	acttcggcgc	gggggtgtcc	3840
10	ggcttgctga	accaggcctc	gagtcgatg	gtggggagcg	tctccggcct	gggcaatgcc	3900
	ggcagcctgg	catccgggtg	gctgaactcc	ggcgtcgaca	tctcgggcct	gttcaacgtg	3960
	agcacgctgg	gctccgcgoc	ggcggtgatc	tcgggtttcg	gcaacctggg	caaccacgtg	4020
	tcgggggtgt	ccatcgatgg	cctgctggcg	atgctgacca	gcggcggggc	gggcggctcc	4080
	gggcagctga	gcacatcgga	cgcgggcgatc	ggcagctgac	ggcaccctgaa	tcgcgtgaac	4140
15	atcgtcaacc	tgggcaacgt	cggcagctac	aacctcggct	tcgccaaacgt	cggcgacgtc	4200
	aacctggggc	cgggcaacct	cggcaacctc	aacctcggcg	gtggcaacct	cggcgggcag	4260
	aacctggggg	tgggcaacct	cggggacggc	aacgtcgggt	tcggcaacct	cggccacggc	4320
	aatgtcgggt	tcggcctggg	gggcctgggg	gcgctgccc	ggatcgccaa	catcgggttg	4380
	ggcaacgccg	gcagcaacaa	cgtcggcttc	ggcaacatgg	gcctgggcaa	catcgggttc	4440
20	ggcaataccg	gcaccaacaa	cctcgggatc	gggtcgaccg	gcgacaacca	gaccgggttc	4500
	ggcgccctga	actccgggtg	cggcaacctg	gggttgttca	actccggcac	cggcaacatc	4560
	gggttcctga	acacggggac	cggaaactgg	gggttgttca	actccggcag	ctacaacacc	4620
	ggcatcggtg	acagcgggac	gggcagtacc	gggtttttca	atgcggggag	tttcaacacg	4680
	gggtcgtggc	atgcgggtag	ttacaacacc	ggcagcctca	acgcgggcaa	caccaacacc	4740
25	ggcggtttca	accctggcaa	tgtcaacacc	ggctgggtca	acgcgggcaa	caccaacacc	4800
	ggcggtttca	acacggggac	tgtcaacacc	ggcgtgttca	actccggcag	cttcaacacc	4860
	ggcgcgctgt	ggacgggtga	tcaccacggg	ctggtcggct	tctcctacag	catcgaaatc	4920
	accggcgagc	cctcgggtga	catcaacgaa	accctcaacc	tcgggtccgt	ccacatcgat	4980
	cagatcgata	ttcccgccat	gtcgtgttcc	gacatccacg	aactcgtcaa	catcggggcc	5040
30	ttcaggatcg	tgcccccga	tgtcccccga	gtggtgttgg	acatccacga	aacgatgggt	5100
	atcccgccca	tcgtcttctc	gccgagcatg	acgatcggcg	gtcagacctc	cacgattccg	5160
	ctcgacacgc	cccgcggccc	cgcggcgccg	cccttcagac	ttcgtgtgct	gttcgtgaat	5220
	gcgctcggcg	acaactggat	cgttggggcg	tccaactcaa	ccggaatgag	tgggtggctt	5280
	gtcacggcac	catcctgatc	catcctgatc	atcccaacga	tcacgacatc	gcctatcccg	5340
35	agcctcgcac	taaccctccc	aaccgtcacc	atcccaacga	tcacgacatc	gcctatcccg	5400
	ctcaagatcg	atgtgtcggg	cggctctccg	gccttcacgc	tggttcccgg	tggcctcaac	5460
	atcccgcaaa	atgcgatccc	gttgaccatc	gatgcgtccg	gcgtgttgga	tccgatcacg	5520
	atattccggg	ttgggtttac	gatcgatccg	gtcgcactga	gcctggccct	caacatcagc	5580
40	gtgccgggaca	gcagcgttcc	gatcatcatc	gttccgcgca	cgcggcgctt	cgggaacgcg	5640
	accgcccacc	cgtcgtcggg	tttcttcaac	tcgggcggcg	gcgggggtgt	gggtttcggc	5700
	aacttcgggg	ccggcagctc	aggctgggtg	aaccaggcgc	atgcgcgctt	ggcgggcgcg	5760
	ggctcggcg	ttctcaacgt	tggcacgctg	gtcctcgggtg	tgctgaacgt	cggctcgggg	5820
	atcgcggggc	tgtacaacac	cgtatcgtg	gggttgggga	cgcggcgctt	gggtgtcgggt	5880
	gocggcaacg	tggggccagc	gctgtcgggg	gtgttggcgg	ccgggacggc	gttgacccaa	5940
45	agccccatca	tcaacctcgg	gttggccgat	gtcggcaact	acaacctcgg	gttgggcaac	6000
	gttggggact	tcacacctgg	cgcggccaac	cgcggcgacc	tcaacctagg	gttgggcaat	6060
	atcgggaacg	ccaacgtcgg	cttcggcaat	atcggccacg	gcaacgtcgg	gttgggcaat	6120
	tcgggcctgg	ggcgcgcgct	cggcatcggc	aatatcgggt	tgggcaatgc	gggcagcacc	6180
	aacgttggcc	tggccaacat	gggtgtgggc	aacatcgggt	tcggcaacac	cggcaccacc	6240
50	aacctcggga	ttgggttgac	cggcgacaac	cagaccggca	tcggcggtt	gaactcgggt	6300
	gccggcaaca	ttggcctggt	caactcgggc	accggcaaca	tcgggttctt	caactcgggg	6360
	accggaaact	gggggttgtt	caactcgggc	agcttcaaca	ccggcatcgg	taatagcgga	6420
	acgggcagta	ctgggctttt	caatgccggt	gggttcaacta	cgggtctggc	caacgcgggg	6480
	tcgtacaaca	cgggcagctt	caatgtcggg	gacaccaaca	cgggtggctt	caaccggggc	6540
55	agcatcaaca	ccggctggtt	caacaccggg	aacgccaaca	ccggcatcgc	gaactcgggg	6600
	aatgtcgaca	ccggcgccct	catgtcgggc	aacttcagca	acggcatcct	gtggcggggc	6660
	aactacgaag	gcctattcag	ctattcctac	agcctcgacg	ttcccccggat	caccatcctg	6720
	gacgcgcatt	tcacccgggg	cttcggcccg	gtggctgctc	cgcctatccc	ggttctggcg	6780
	atcaacgcgc	acctgaccgg	caacgcggcg	atgggcgcct	tcaccatccc	gcaaatcgat	6840
60	attcccgccc	tcaatccgaa	cgtcaccgga	agcgtcggct	tcggccccc	cgcggtcccc	6900
	tcgggtcacca	ttcccgccct	gaccgcggca	cgagcgggtc	tcgatatggc	cgcgtcgggt	6960
	ggggcgacca	tcgaaataga	gccgtttatc	gtctggagct	catccgggtc	gatcggccca	7020
	acgtgggtact	cgggtcggcag	aatctacaac	gccgggtgac	tggtcgtcgg	cggcaatata	7080
	atctcgggaa	tcccgacgct	cagcaccgac	ggcccggtgc	atgcgctctt	caatgcggga	7140
65	tctcaggcgt	tcaacacccc	ggcgctcaat	attcaccaga	tcccgttggg	tttccagggt	7200
	cgggcagca	tcgacgcgat	cacctgttcc	cccggtggtc	tgacgttccc	ggcgaaactc	7260
	ctgctgaacc	tggatgtgtt	cgtcggcacc	cccgcgccca	ccattccggc	gatcacgttc	7320



```

cgggagatcc cggcgaacgc cgacggcgaa ctctacgtca tcgcccggcga catcccgtcg 7380
atcaacatcc cgcccacccc gggcattggg aacaccacca cggttccgtc gtcgggcttc 7440
ttcaacaccg ggccggggcg gggctcgggt ttccggcaact tcggcgcgaa catgtcgggg 7500
tgggtggaacc aggcgcacac cgctttggca ggccggggtt cgggtattgc caacgtcggc 7560
5 acactgcact cggcgctgct caacctcgggt tcggggctgt cggggatcta caaccaccgc 7620
acgctgccgc ttgggacgcc ggcgttgggt tcgggcctgg gcaacgtcgg tgatcacctg 7680
tcgggcttgt tggcctccaa cgtggggcaa aaccccatca ccacgtccta catcgggttg 7740
gctaacgtcg gcaacggcaa cgtcggcctc ggcaacatcg gcaacctcaa cctgggtgctg 7800
gccaacattg gcgacgtgaa cctgggattc ggcaacattg gcgacgtgaa cctgggcttc 7860
10 ggcaacatcg gcggcggcaa cgtcgggttc ggcaatatcg gcgatgcaa cttcgggttc 7920
gggaattcgg gtctggcgcc gggcctggcc ggcatgggca atatcgggct gggcaacgcc 7980
ggcagcggca acgtcggctg ggccaacatg ggctcgggca acatcgggtt tggcaacacc 8040
ggcaccacaa acctcgggat cgggctcacc ggcaacacc agtcgggcat cggcggttg 8100
aactccggga ctgccaacat tggcctgttc aactcgggca caggcaatat cggcttcttc 8160
15 aactccggga ctgccaacat tggggtgttc aactcgggca gctacaacac cggtatcggc 8220
aactccgggg tggccagcac cgggttgggtc aacgcggcg gcttcaacac cggtgtggca 8280
aacgcggggt cgtacaacac gggcagcttc aatgctgggtg acaccaacac cggtggtctc 8340
aacccaggca gcaccaacac cggctgggtc aacacgggta acgccaacac cggcgtcgcc 8400
aacgcgggca atgtcaacac cggcgccctc atcaggggca actttagcaa cggcatctta 8460
20 tggcggggca attacgaggg cttggccggc ttctccttcg ggtaccccat tccgctgttc 8520
cccgcggtgg gcgcggacgt caccggcgac atcggccccg ccaccatcat tccgcccac 8580
cacatcccg ccatcccggt gggcttcgcc gcgatcggcc acatcgggcc gatcagcatc 8640
ccgaacatcg ccacccctc gatccacctg ggcatcgatc ccaccttcga cgtcggccct 8700
atcacgtgg acccatcac cctcaccatc cctggcctaa gtttgatgc tgcgctctcg 8760
25 gagatcagga tgacgtccgg aagcagctcc ggattcaagg tcagaccag cttttcatc 8820
ttcgcggtcg cgtcggacgg catgcccggt ggcaaggctc ccatactca accattcaac 8880
gtggcaccca tcaacttgaa cccgacgaca ctgcaacttc cgggattcac cattccacc 8940
ggacccatcc acatcggcct gccgtgtcg ctgaccattc cgggcttcac catccgggc 9000
ggcaccctga tcccccaact cccgctgggc ctcggttgtt cggcgggcac cccaccctt 9060
30 gatctccga cggtcgttat cgcacggatc ccggtggagt tacacggcag caccaccatc 9120
ggcccggtca gctcccgat tttcgggttc ggcgggagac cgggctttgg caacgacacc 9180
accgcgcggt cgtcgggctt cttcaacacc ggcggttgtg gcgggtccgg cttctccaac 9240
tcggggtcgg gcattgtcgg ggtgctcaac gcgatctcgg atccgctgtc cgggtcggcg 9300
tcgggcttcg ccaatttcgg caccagctc tcgggcaccc tcaaccgtgg cgcgggcac 9360
35 tcgggctgtg acaacacggg cacgcttggc ctggtcacat cggccttctg ctcgggcttt 9420
atgaacgtcg gccagcagct gtggggcctg ctgttcgctg gcaccgggccc gtaa 9474

```

<212> Type : DNA

<211> Length : 9474

40 SequenceName : SEQ ID 526

SequenceDescription :

Sequence

-----

45 <213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

```

atgagttttg tcgtaatgcc gccagagatc aactccctgc tgatatatac cggggcggggt 60
ccgggccccg tgttggcggc ggccgcggcc tgggatgagc tggccgcgga gctgggctcg 120
50 ggcggcgccg ctttcgggtc ggtgacctcg gggctggctg gtggatcttg gcaggggccg 180
tcctcgggtc cgtatggcgcc ggccggccgc ccgatgagg ggtggttag cgcggcgccg 240
gcctccggcg agtcggcgcc cgggcaggcc cggcggtggt tgggtgtgtt cgaggcgccg 300
ttggccgaga cgttggaccc cttcgtcatc gcggccaatc ggtcgaggtt agtgcgctg 360
gcgttatcga atctgttcgg ccagaacacg ccggcgatcg cggccgcgga gttcgactac 420
gagctgatgt gggcccagga cgtggcccg atgctgggtt accacaccg cgcctcggcg 480
55 gcggccgagg cgttggcgcc gtttggctcg ccgctggcaa gcctggcgcc cgcgcggag 540
ccggccaagt cgtcgcgct caatctgggt ttggccaacg ttggcctctt caacgcggga 600
agcggcaacg tcggcagcta caacgtgggg gccggcaacg tcgggagcta caacgtgggc 660
ggcggcaata tcggtggcaa caatgtcggg ttgggcaatg tcgggtgggg caactttggg 720
ctcgggaatt cggggttaac gcggggtctg atgggtctgg gtaatatcgg gtttggtaat 780
60 gccggcagct acaatttcgg tttggcgaat atgggtgtgg gcaatattgg gttcgctaac 840
accggcagtg ggaatttcgg tattgggttg accggtgata atctgaccgg gttcgggtgt 900
ttcaataccg gtagcgggaa tgtggggttg tttaattcgg ggaccgtaa tgtggggttc 960
tttaactccg gcaccgggaa ctgggggttg ttcaattcgg ggagctataa caccgggatc 1020
ggtaattcgg ggattgccc caccgggttg ttcaacgcgg gtgggttcaa tacgggtgtg 1080
65 gtcaatgcgg gtagctacaa caccggcagt ttcaacgcgg gggaggccaa tacgggcggt 1140
ttcaaccggg gcagtgtcaa caccgggttg ttgaacaccg gtgacatcaa caccggggtg 1200
gccaaactcc gcgacgtcaa caccggtgcc ttcatctcgg gtaactacag caacggcgctc 1260

```

	ttgtggcggg	gcgactacca	gggcctgctc	ggcttctcct	cgggagcgaa	cgttcttcc	1320
	gtcattcccc	tcagcctgga	cataaacggt	gggtgcggcg	ccatcactat	cgagcccatc	1380
	cacatacttc	ccgacatccc	gatcaacatc	aacgaaaccc	tctacctcgg	acccttggtc	1440
5	gtcccgccca	tcaacgtccc	ggcaatctcg	ctcggcgtcg	gcatacccaa	tatttccgatc	1500
	ggccccatca	aatcaatcc	catcaccctg	tggcggcgac	aaaacttcaa	ccaaaccatc	1560
	acgtctggct	ggcccgctc	gtccataaca	attcccaaa	tccaacaggt	cgccctcagc	1620
	ccttccccca	ttcccacaac	cttgatcggc	ccaatacata	tcaataccgg	gttttccatc	1680
	ccagtaacct	tcagttattc	caccccgacc	ctcacccttt	tcccgggttg	cctcagcatt	1740
	ccccacgggg	ggccgctcac	cctgactctt	ggcgtaacgg	caggcaccga	ggccttcacc	1800
10	atcgctggat	tctcgattcc	cgagcaacca	cttcgctgg	cgatcaacgt	gattggccac	1860
	atcaacgccc	tgagcaccac	ggcaatcacc	atcgacaaca	tccccctgaa	cctgcacgcc	1920
	atcgcgggcg	tcgggcccgt	cgacatcggt	ggcggaacgg	ttccggcgctc	gccgggggttc	1980
	gggaattcga	ccacgcgccc	gtcctcgggc	ttctttaaca	cggcgccggg	cgggggtgtcg	2040
	ggatcgggat	acgtcgggcg	gcacacctcg	ggctgggtta	accagtcac	cgaggccatg	2100
15	cagggtgttc	cggaacgggt	ttcgggctat	ttcaactcgg	gcaggttgat	gtcgggtatc	2160
	ggcaatgtag	gtactcagtt	gtcggggatg	ttgtcgggcg	gcgcgctggg	cggcaacaac	2220
	ttcggtattg	gcaatatcgg	gttcgacaac	gtcgggttcg	gcaatgcccg	cagcagcaat	2280
	ttcgccggat	cgaacatggg	catcggaac	atcggggttg	ccaataccgg	caacgggaat	2340
	atcggtatcg	ggctcagcgg	ggacaatctg	actgggttcg	gtgggttcaa	ttcgggcagc	2400
20	gagaatgtgg	gattgttcaa	ttcgggtacc	ggcaatgtcg	ggttcttcaa	ctccggcacc	2460
	gggaatttgg	gcgtattcaa	ttcgggaagc	cacaacacgg	gtttcttctt	aacgggcaac	2520
	aatctgcaag	ccttcgcccc	gtccaccctt	tcaccatttc	cgaaatcccc	cgaaatcccc	2580
	attgacctgc	aggtgattgg	cgggatcggt	cccatccacg	tccagcccat	cgatattccg	2640
	gcattcgaca	tacaaatcac	cgggggattc	atcgggatcc	gcgaattcac	tctcccgag	2700
25	atcaccattc	ccgcgatccc	gatccacgtg	accggaacgg	tcggcctcga	gggttttcac	2760
	gttgatcccg	cttttggctt	tttcgggcaa	accgcatgg	cagaaatcac	cgcgggaccg	2820
	gtcgtcttgc	cggaccctgt	catcacgac	gaccactacg	gcccgcggct	aggcccaccc	2880
	ggcgcgaaat	tcccctccgg	gtcgtttotac	ctcagcatca	gcgacctgca	gatcaatgga	2940
	cccatcatcg	gcagctacgg	cggcccgggc	acgactcccc	gcccgttcgg	cgcgactttc	3000
30	aatctgcca	catctgtctt	ggccttgctc	cggcccgcc	tcacggttcc	cgaccaaaca	3060
	ccggtgaccg	tcaacctgac	cggcgccctg	gacagcatca	cgctattccc	gggcggcctg	3120
	gcgttccccg	aaaaccccg	ggtcagcctc	accaacttct	ccgtcggcac	cgggtggattc	3180
	accgtgttcc	cgcaggggtt	cacggttgac	cgcactcccg	tggaacctgca	caccaccctt	3240
	tcatttggcc	ctttcccggt	ccggtgggac	taccctccgc	caaccccgcc	caacggcccc	3300
35	attccggcgg	tcccaggcgg	ctttggcctc	accagcgggc	tgtttccatt	tactttcacc	3360
	ctcaacggcg	gcacgcggcc	catcagcatc	ccgaccacca	ccgttgtgga	tgcgctaaat	3420
	cccctcctga	ccgtcacggg	aaacctcgag	gtcgccccc	ttaccgtccc	ggacatcccc	3480
	atccccgcca	ctcctgttgg	ccctcgacga	aacgtcaatg	tgagttttaa	cgccccggcc	3540
	actaccctgc	tgtccggcct	gggcatcacg	ggaagcatcg	atatctccgg	aatccaaatc	3600
40	acgaatatac	agaccagccc	cgccagctg	ttcatgtcgg	tcggtcagac	tcttttcttg	3660
	tttgacttca	gagacggcat	cgaactgaat	ccgattgtaa	ttccgggaag	ttctattccc	3720
	ttctctttcg	gttccccggc	atccaccgta	cccatctca	tgtaatocat	accgctcaac	3780
	atcgacgtgt	ccatcaacct	cgaggacgcc	gtcttcatcc	cggccaccgt	gctgcccgca	3900
45	attccgctga	acgtggacgt	cacaatcccc	gtgggcccga	tcaacatccc	gatcatcacc	3960
	gagccgggct	cagggaaact	caccaccacc	acgtcgagtc	ccttcagcgg	tttggctgtc	4020
	ccgggcctgg	gtgtgggact	gttgggcctg	ttcgacggga	gcacgcgcaa	caacctgac	4080
	tcgggcttca	attccgcggg	cgggatcgtc	ggcccgaacg	tggggttgag	caacctcggt	4140
	ggcgggcaatg	tcgggttggg	caatgtcggg	gaacttcaac	tggttgccggg	caacgtcggg	4200
50	gggttcaatg	tggttgccgg	caatatcggc	ggcaacaatg	tcgggttggg	caatgtcggg	4260
	tttggcaatg	tcgggttggc	gaattcgggg	ttaacgcggg	gtctgatggg	tttgggtaat	4320
	atcggttttg	gtaatgcggg	cagctacaat	ttcggttttg	cgaatatggg	tgtgggcaat	4380
	attgggttcg	ctaacaccgg	cagtgggaat	ttcggtattg	ggttgaccgg	tgataatctg	4440
	accgggttcg	gtggtttcaa	taccggcagc	gggaatgtgg	ggttgtttaa	ttcggggacc	4500
55	ggtaatgtgg	ggttctttaa	ctctggcacc	gggaactggg	gggtgttcaa	ttcggggagt	4560
	tataataccg	ggatcggtaa	ttcggggatt	gccagcacgg	ggttggttaa	cgcgggtggg	4620
	ttcaacacgg	gtgtggtcaa	tgccgggtagc	tacaacacgg	gcagtttcaa	cgcggggcag	4680
	gccaatacgg	gcggtttcaa	cccgggcagt	gtcaacacgg	ggttggtgaa	caccgggtgac	4740
60	atcaacacgg	gggtggccaa	ctccggcgac	gtcaacacgg	gcgccttcat	ctccggtaac	4800
	tacagcaacg	gcgccttctg	gcggggcgac	taccagggcc	tgctcggtct	ctcctaccgc	4860
	ccgcgcgtgc	ttccccaaac	gccgttccgt	gaactcacc	tcaccggcgg	actgggctcc	4920
	gtcgttatcc	cgcgcacga	cattcccgcg	atccgcccgc	agttcagcgc	caacgtcgcc	4980
	atcgacagct	tcactgtgcc	gagcatcccc	attccccaga	tcgacctggc	cgcacaccgc	5040
	gtcagcgtcg	gcctcgggcc	catcaccgtc	ccgcacctcg	atattccacg	ggtgcccgtc	5100
65	acgctgaatt	acttgtttgg	ctcacaaccc	ggcgggcccc	tgaaaatcgg	tccgattacg	5160
	ggactcttca	acacccccat	cggccttacc	ccctggcggt	taagccagat	agtcactcgg	5220
	gctagctcgt	cgcaagggac	catcacggct	ttcctggcca	acctgcggtt	cagcaccccc	5280

	gtcgtcacca	ttgacgagat	cccgtgctg	gccagcatta	ccggccacag	cgagcccgtc	5340
	gacatcttcc	cgggcgccct	cacgatcccc	gcgatgaacc	cgctgagcat	caacctgtcc	5400
	gggtggcaccg	gcgcgcgtcac	cattccggca	atcaccatcg	gcgaaatccc	ctttgacctc	5460
	gtggcccaca	gcacgcctcgg	ccccgttcac	atcctcatcg	accttcccgc	cgtgccgggg	5520
5	ttcgggaata	cgaccggtgc	tccgtcgtcg	ggtttcttca	actccggtgc	gggtgggggtg	5580
	tcgggggtttg	ggaatgtcgg	cgcgatgggt	tcgggtgggt	ggaatcaggc	tccgtcggcg	5640
	ttgctgggtg	gggggttcggg	tgttttcaac	gccggcacgc	tgcatcggg	tgtgctgaat	5700
	ttcggctctg	gcatgtcggg	gctgttcaac	accagcgtgt	tggggttggg	tgcccgccgg	5760
	ttgggtgtcgg	gtttgggtag	tgtcgggtcag	cagttgtcgg	gattgttggc	gagcgggacg	5820
10	gcgctgcatc	aggggtctgg	cctcaatttc	gggttggccg	atgtgggggt	gggcaatgtc	5880
	gggttgggca	atgtcgggga	ctttaacctg	gggtcgggca	acgtcgggtg	gttcaatgtg	5940
	gggtggcggca	atatcggcgg	caacaatgtc	gggttgggca	atgtcgggtg	gggcaacttt	6000
	gggtcgggga	attcgggggt	aacgcggggt	ctgatgggtt	tgggtaatat	cgggtttggt	6060
	aatcggtgca	ggtacaattt	cggttggggt	aatatgggtg	tgggcaatat	tgggttcgct	6120
15	aacaccggca	gtgggaattt	cggtattggg	ttgaccgggt	ataatctgac	cgggttcggt	6180
	ggttttcaata	ccggcagcgg	gaatgtgggg	ttgtttaatt	cggggaccgg	taatgtgggg	6240
	ttctttaact	ctggcaccgg	gaactggggg	gtgttcaatt	cggggaggtt	taacaccggg	6300
	atcggtcaatt	cggggattgc	cagcacgggg	ttgttcaacg	cgggtggggt	caacacgggt	6360
	gtgggtcaatg	cggttagcta	caacaccggc	agtttcaacg	cggggcaggc	caatacgggc	6420
20	ggttttcaacc	cggtcagttg	caacacgggt	tggttgaaca	ccggtgacat	caacaccggg	6480
	gtggccaact	ccggcgacgt	caacaccggc	gccttcatct	ccggcaacta	cagcaacggc	6540
	gccttctggc	ggggcgacta	ccagggcctg	ctcggttct	cctacaccag	caccatcatt	6600
	cccgaattca	ctgtcgcgaa	catccacggc	tcgggcggcg	ccggaccat	catcggtccg	6660
	tcgatccaat	ttccggcaat	tccttgggac	ctcagcgcaa	ccggccacat	cggcggcttc	6720
25	accatccccc	cgggtgtccat	ttccccgatc	acgggttcgca	tcgaccaggt	cttcgacctc	6780
	ggccccatca	ccgtccagga	catcacgatt	cccgccctgg	gactcgacct	cgaaccgggt	6840
	gtcacccgtg	gcccgatatt	cagctcaggc	tcctatcatc	atccattcag	ccttacgctg	6900
	ctgggggttca	tcaacgttaa	tgtccccgcc	atccaaacgg	cggccagcga	gattctgcca	6960
	ttcacccgtg	tgtcagtttc	gcttggcggt	acccatctaa	caccggaaat	caccatcccc	7020
30	ggattccaca	taccgctcga	tccaatccat	ctcgagctgc	ccctgtccgt	caccatcgga	7080
	cccttcgtga	gcccggaaat	caccattccc	caactccgcg	tgggcctcgc	gttgtccggc	7140
	gccacccccg	ccttcgcctt	ccctctggag	atcaccatcg	accgaatccc	agtggttctc	7200
	gacgtcaacg	cgctgctcgg	ccccatcaac	gccgggttgg	tcaccccgcc	cgtcccgggg	7260
	ttcgccaaca	ccgcgcgggt	ccgctcgtcg	ccgttcttca	acatcggcgg	tggcggcggg	7320
35	ttgtcggggt	tcacaaacct	cggcgcgggc	atgtcgggcg	tgctcaacgc	gatctcggat	7380
	ccgctgctcg	gatcggcgct	gggcttcgcc	aacttcggca	cccaactctc	cggcatcctc	7440
	aaccgcggcg	cggacatctc	gggtgtgtac	aacaccggcg	cgtggggcct	gatcacctcg	7500
	gcctcgggtc	ccggtctcgg	caacgtcggc	cagcaactgg	cgggcctgat	ttacaccggc	7560
	accgggccct	aa					7572
40	<212> Type : DNA						
	<211> Length : 7572						
	SequenceName : SEQ ID 527						
	SequenceDescription :						
45	Sequence						
	-----						
	<213> OrganismName : Mycobacterium tuberculosis H37Rv						
	<400> PreSequenceString :						
	atgtcatttg	tgattgcggt	gccggaagca	ttgacgatgg	cggcttcgga	tctggccaac	60
50	attgggttga	cgatcaacgc	ggcgaatgcg	gcgcggccat	tgccgaccac	gggggtgggtg	120
	gcggctgccg	cggatgaggt	ttcggcgcca	gttgccggct	tgctcgggtc	gtacgcgcag	180
	agctatcagg	cttttggtgc	gcagctgtcg	gcgtttcacg	cccagttcgt	gcagtcctct	240
	acgaacggcg	cgcgtcdata	cgtagttgcc	gaggccacca	gtgctgcgcc	gttgaggat	300
	ttgttggggc	tggtaaatgc	ccccgccag	cgcttgttgg	ggcggccggt	gatcggcaat	360
55	ggcgctaacg	gggcgcagcg	gacgggggct	ccgggtgggc	cgggcgggct	gttgcttggc	420
	aacggcggga	atggcggatc	gggtgcgccg	ggtcagccag	tggttgctgg	cggggatgcg	480
	gggttgatcg	gtaacggcgg	gactggcggt	aaaggtgggg	acgggctggg	cgggtccggt	540
	gctgcggggg	gtgtcgggtg	tcgcgggtga	tggttgctgg	gtaatggcgg	gaccggtggg	600
	gctggtgggg	ctgcaggggc	cactttgggt	ggcggtactg	gcggtgtcgg	tggggcgacg	660
60	gggttgatcg	gcagcggggg	cttcggcggt	gctggcgggg	ccgcggcggg	ggtgggcacc	720
	accggcggcg	tgggcggggg	cgggtggcgt	ggcgcggtgt	tcggcaatgg	tggattcggc	780
	ggggccgggtg	gccttggcgc	cgcggcgggc	gtcggaaggg	cggccagcta	cttcgggacc	840
	ggggcggggtg	gcggcggttg	tggggacggg	gcgccgggtg	gtgacggcgg	tgccgggtccg	900
	ctattgatcg	gcaatggcgg	tgttgggggt	ctgggtgggg	ccggggcggc	cgggtgtaat	960
65	ggcgggtgccg	gcgggatggt	gttgggcgat	ggcgggtgcc	gcggacaggg	tgggcggggc	1020
	gtggcgggtg	tcctggcgcg	gatcccgggc	gcgggcggca	acggcggtta	tgccaactgg	1080
	ttcgggtccg	gtgggtgccg	cgggcagggt	ggcaccgggt	tggccggggc	aaacgggggtc	1140

	aacccccggct	cgattgcgaa	ccccaacacc	ggtgcgaacg	gtaccgacaa	cagcggcaac	1200
	gggaatcaaa	ctggcgggaa	cgggggtccc	ggccccgcg	gtggcgtcgg	cgaggctggc	1260
	ggcgtcggcg	ggcaggggcg	gctgggggag	tgcctcgacg	gcaacgacgg	caccggcggt	1320
	aagggtggag	ccgggggtac	tgccggtacc	gatggcgtg	ccggcggcgc	tggcggcgct	1380
5	ggcggcatag	gtgagaccga	cggcagcgcc	ggcggcgtg	ctaccggggg	tgaggggggt	1440
	gacggtgcca	ccggaggggt	cgacggtggc	gtgggtggtg	ctggcggcaa	ggggggggcag	1500
	gggcacaaca	cgggtgtagg	tgacgctttc	ggcgggtgacg	gcggaatcgg	cggtagcggg	1560
	aacggggcac	taggcgcggc	gggcggtaac	ggcggcaccc	gtggtgccgg	tggaaacggg	1620
	ggacgtggcg	ggatgttaat	cggcaacggc	ggcgccggcg	ggggcggcgg	gacgggcggc	1680
10	accggtgggt	gtggcgccgc	cggcttcgcg	ggcgggtgctg	gcggcgcggg	cggagagggg	1740
	ctcaccgacg	gtgcgggtac	cgcgggaaggc	ggcacccggc	gtctgggggg	cctcggcggt	1800
	gtcggcggtg	ccggcggtat	gggtggcagc	ggcgggtgctg	gcggcaacgg	cggggcggtc	1860
	gggtcgctca	tccggcttg	tgggtggcgg	ggtgcgcggc	gtgtcggcgg	caccggtggc	1920
	atcggcgcca	tcggtggtgc	cggcggaacc	ggtggcgccg	gcggcgcggg	taccaccacc	1980
15	ggcgggggag	cgacaattgg	cgggtggcgc	ggtacaggcg	gcgtgggggg	cgctgggtgg	2040
	actggcggtg	ccggcgcgcg	cggcgggacc	accggcgcca	gcggcgggagc	cggcgggctg	2100
	atcgggtggg	caggagctgc	cggcggcacc	ggcgagggcg	gcacgggtgg	gcaaggtggc	2160
	ctcggcgggc	agggcgggcaa	cggcggaacc	ggcggaaccg	gcgcgaccgg	cggtcagggg	2220
	ggcgatttcg	cgctggggcg	caacgggggc	ggcgggcgcg	cgggtgggtc	accgggtggc	2280
20	agctccggca	tccagggcaa	tatgggcccc	cccgccaccc	agggcgccga	cggatag	2337

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2337

SequenceName : SEQ ID 528

25 SequenceDescription :

Sequence

-----

30 &lt;213&gt; OrganismName : Mycobacterium tuberculosis H37Rv

&lt;400&gt; PreSequenceString :

	ccccaggcg	ccgacggcaa	cgccggcaac	ggcgggtgacg	gcgggggtcgg	cggcaacggc	60
	ggaaacggcg	cagacaacac	caccaccgcc	gccgcgggca	ccacaggcgg	ggccggcggg	120
	gccggcgggg	ccggcggaac	cggcggaacc	ggcggagccg	ccggcaccgg	caccggcggc	180
	caacaaggca	acggcggaac	cggcggaacc	ggcggcaccg	gcggcaagg	cggcaccggc	240
35	ggcgacggtg	cactcgaggg	cagcagcggt	ggtgcgcggc	gtaaaggcgg	caacggcggc	300
	gacgcccggc	aggccggtac	cggctccgct	cctggcgacg	cggggaccgg	cggcgatggg	360
	ggtaagggcg	gcaacggcgg	cattggcgct	gccggcacaa	ccggccccgt	aggcaccggc	420
	gcgtccggcg	gcaccggtg	tagtgggtgc	gcggcgga	ccggcggtga	cggcggcggc	480
	gccaacggcg	gcaccgccc	ggctggcggg	gcggcgggca	atggcgggca	aggcgggcag	540
40	ggtggagcag	gcgtcaccag	cagcaccgcc	ggcaacagcg	gcggcgcggg	cggcagcggc	600
	ggaaagggcg	gagacgcggg	cgcggggcgg	gccggtgcca	ctccgggcgc	caacgggtatc	660
	ctcggcaatg	gcggcgacg	cggagatggc	gcggcggtg	ccgtcgccat	ctccggcgcc	720
	accggcgctg	gcgacggcgg	gcatggcgga	accggcgcg	ccggcgggca	cggtggaacc	780
	ggcgggtgctg	gcggtagcgg	catcgacggc	gtcggcgcg	ggaccggagg	taccggcggc	840
45	aacggcgggc	acggcgccat	cggcgcgct	ggcggagacg	ccgggtggtg	cggaaatagc	900
	ggcgggaacg	gtgggattgg	cggaaagggc	gtgcgggtgg	tgccggcggg	tgccggcggg	960
	agcaacggcg	gtaccgtcgg	cgccaacggg	accggcgcg	acggcgggca	cggcgggcgt	1020
	gccggggccg	ccacggctgg	cagcaacggg	ggggcgggca	ccggctcggc	cggcgggcaac	1080
	ggcggcaccg	gcggcagagg	cggcagtggt	ggcgccggcg	gcgacgggat	cggtagcgct	1140
50	ggcggcgggc	agggcgggca	cggcgcgga	ggcggaagtc	gcggcgcggg	cggcgccggc	1200
	ggcagcgggc	ccaacaccag	tcccgcgggc	aacggcgggc	aaggaggtca	aggcgggcag	1260
	ggtgggtgccg	gtggggcggg	cggggctggc	ggcgccggcg	gcggcgctaa	cggcaccgct	1320
	ggcaacggcg	gccaaaggcg	tgcggcgggc	accggcgcg	ccggcgcgag	ctcctcagct	1380
	accaacggcg	gcagcgcg	cgcggcgggc	accggaggcg	acggcgggcag	cggcgggcgc	1440
55	ggcggcaccg	gaggcgcg	cggcacggcg	ggggcgggcg	gcgacggcgg	acaagggtgg	1500
	caggggcgcg	ccggcgcg	tgcgggtggt	caagggtggt	ccggcggtgc	cggcgggacc	1560
	ggcggcaacg	gcggcaatat	caccggcggg	accggcgggc	ccggcggggg	cggcggtaac	1620
	ggcggcgccg	ccggaaagg	tggcgccggc	ggcgaaggcg	gcaccgggtg	cgggaccggg	1680
	ggtcaggggtg	gcgcggcg	cgacggcggt	ggcgcgggca	ccggcgggcg	ccgcaccgtc	1740
60	ggcgggtggc	cggctcccgc	cggctccggt	ggacaaggcg	gtaacgctgg	cggtaggtgg	1800
	gccggcgggc	aggggtggag	cgaaggcggg	agcgggcgcg	acggcgggcg	cggcgggcaca	1860
	ggtggcaatg	gcggttaacg	cggcaaccgt	aattccggca	atggcaccgg	cggcgctggc	1920
	ggcgaacggg	gtgggtggtg	taacgggtgg	ctggggcgcg	ctggggggcag	cggcgggcgg	1980
	accggcgggc	acggcgcg	tggcgcgag	gccggcgag	ccggcaacgg	cggcaacggc	2040
65	aacggcaccg	gcaacggcg	caacggcg	aacggcgcg	tcgcccggat	ggcgggcaac	2100
	ggcgggtgccg	ggacggcg	cggcaacggc	ggcaacggcg	gcagcgcg	caacggcg	2160
	aacgcgggca	tggcgggcaa	cagcgggcacc	ggcagcgcg	acggcggtgc	cggcggggaa	2220

5 ggccggcgcgg cggggcacggg cggcaccggc ggccgacggcg gcctcaccgg tactggcggc 2280  
 accggcgggca gcggtggcac cggcggtgac ggccggtaac gcggcaacgg agcagataac 2340  
 accgcaaac tgactgcgca ggccggcggt gacggtggca acggcgggca cgggtggcttc 2400  
 ggccggcgggg cgggggcccgg cggcggtggc ttgaccgctg gcgccaacgg caccggcggg 2460  
 caaggcggcg ccggcgggca tggcgggcaac gggggccatcg gcggccacgg cccactcact 2520  
 gacgaccccg gcggaacagg gggcaccggc ggcaacggcg gcaccggcg caccggcggc 2580  
 gcgggcatcg gcagccttgg cggcgggcact ggccggcgatg gcggcaacgg cggcaacggc 2640  
 ggtaccggcg gcgagggcg cgaggtcgcc ggcccgcgcg gcaccggcg tggcgccggc 2700  
 aatggcgggc atggcgggcac cggcgggcacc ggccggcggg acggggggcg cggcgggcacc 2760  
 10 ggccggcaccg gcggcaccgg cggcctcgcc gaccccccgg tcggcggtac cggcgggcag 2820  
 ggccggcaccg gcggcaccgg cggcgggcacc ggcaatggcg gcaacggcg ccaacggcg 2880  
 gcgggaggca atggcaacgg cggcaccggg ggggcccggc gtatcgggcg caccggcggc 2940  
 aatggcgggc acggcgaggc cggagtgccc ccgggagccg gtggtgctgg cggcgccggc 3000  
 accaccggcg gcaagggtgg caccggcgcc aacggcagtg gcaccggctc gggcgggcacc 3060  
 15 ggccggcgatg cggcgaccgg cggcggtggg gggaacggcg gcaccggctg gaatggcgcg 3120  
 aaggagaca ccggcgaggc cggcgggcgg ggagacggcg gtaaggcacc agccgggtggc 3180  
 accggcgggc ccggcgggca cggcgggagg ggccggcaag gcggcaggcg cggcggtctag 3240

<212> Type : DNA  
 20 <211> Length : 3240  
 SequenceName : SEQ ID 529  
 SequenceDescription :

Sequence  
 -----  
 25 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :

atggtcatgt cgctgatggg ggccggcgag ctgggtggcg cggccggcg ggacttgacc 60  
 gggattgggc agggcatcag cggcggaat ggccggcgag cggggccgac gacgcaggtg 120  
 30 ttggcgggcg ccgggtgatga ggtgtcgggc gcgatcgcg cgttgtttgg taccacgcg 180  
 caggagtacc aggcgttgag cggcggggtg gcgacgtttc atgagcagtt tgtgcgctcg 240  
 ctgaccgcgg ctggcgagcg gtatcgcgact gccgaggcgg cgaatgcac accgctgcag 300  
 gcgctggagc agcaagtgtt ggggtcgatc aacgcgcccc cacagctgtg gttggggcg 360  
 ccgctgatcg gtgatggcgt tcacggggcg ccgggggacc ggccggcgcg tggggcggg 420  
 35 ggggtgttgtt ggggtaattg cggtaacggc ggttcggggg cggccgggtc agtcggtggg 480  
 ccggcgggcg cggccggggtt gttcggaac ggccgggtcc gcgggtccgg cggggcgggc 540  
 gctgcggcg gtgtcgcgcg atccggcggg ttggttgaa gcgaacggcg ggccggcggg 600  
 gccggcgggg ccggcgctaa cgggtggtgc ggccggcaac cctggttgtt cggggcgggc 660  
 ggggtccggc gcgcggcgac caatgggtgg ctcggcgggg ccggcgggatt tgtctacggc 720  
 40 aacggcgggc ccggcgggat cggcggcac gcaggtatag gcggcaacgg tggcgacggc 780  
 gggctgttcg ggaacggcg cggcgggggg gccggggcg cgggctgccc ggggtgcggc 840  
 ggccctcaac gcggcgagcg cagcgacggg ggcaacggcg gaaccggcg caacggcggg 900  
 cggcggggtt tattgttgg caacggcggg cggcgggcg cggcgggcg cggcgggcg 960  
 ggtggtaagg gcggcgctgg cgatccgagt ttccgctga acaacggtgc cggcggtaac 1020  
 45 ggccggtcac gcggcaaccc cggcggtggg gggggcggtg gggcgggcg cctgctggcg 1080  
 ggtgcgcac gtgcgcggcg cggcaccccc accagcgcg gcaacggcg cgatggcgcg 1140  
 atcgggcgca acccctaaca cggcggggg cggcgggtaa tggcggtcat 1200  
 ggccgggttg tggcaacgg cggcaccggc ggccggcgcg gtgcccgtca tggcggttcc 1260  
 accggcgcta ccggtaccgc cttacaacgg acggcgggta acggcaccaa tggcgggcg 1320  
 50 gggggccacg gcggtaatgg cggaaatggc ggccggcag acggcgacgg cggcgtcggc 1380  
 ggcaaggcg gtgcggcgcg tagcgcgggc gccggcgga acggattcga cggcgccacc 1440  
 ttgggttcgc ccggtgccga tggcggtatg ggccggcaac gcggcaagg cggtgacggc 1500  
 ggcaaggcg gtgatggcg agccggtgcc gccggtgatg tgacctggc cgtcaaccag 1560  
 ggtgcccggc gtgacggcg caacggcggt gaaagtggcg ttggcggaac ggggtggggc 1620  
 55 ggcggtgtta gcgcaaccc ggccctgaac ggttcggcg gggcggaac caccgccc 1680  
 accagcgggc gcaacgggtg caacggaggt gccggcgcca ccccaccgt cggcgagaa 1740  
 aacggcgggc ccggtggtta cggcgggcat ggccgggtcg tcggtaacgg cggtgcggt 1800  
 ggtgcccggc gaaatggcgt cggcgggcacc ggccctgccc tcaacggcg caacggcg 1860  
 aacggcgga cggcggtatg cggcgggcg ggttcggcg gggcggaac cggcggaag 1920  
 60 ggccggcaac gggcgggcg agccaacggc caagacttct ccgctccgc caatggcgcg 1980  
 aatggcgga agggcggaac cggcggaac ggccggcatg gcggcaagg tggtagcgcc 2040  
 ttcgcccagt tcgctaaggc cggcaacggc ggtgcccgg gcaacggcg caatgtggc 2100  
 gttgcccggc aggtggggc cggcggaag gcggccattc cagccatga gggtcgac 2160  
 ggccggcgat gcaccgcacc caccagcgcg ggtgacggcg gcaacggcg caacggcg 2220  
 65 agccccaccg tcgcgggcg caacggcggt gacggcgga agggcggaag cggcggaat 2280  
 gtcggcaatg gcggcaatgg cggggcgggc ggcaacggcg cggcgggcca agccggtacg 2340  
 ccggggcccta ccagcggtga ttccggcacc tcggcgaccg acggtggggc tggcggaac 2400

	ggcgggggcg	gcgggcgccg	cggaaactg	gccggccacg	gcggaacgg	tggttaaggt	2460
	ggttaacggc	gccaggggtg	catcgccggc	gccggcgaga	gaggcgccga	cggcgccggc	2520
	cccaatgcta	acggcgcaaa	cggcgagaa	ggcggtagcg	gtggtaacgg	tgccgacggc	2580
	ggcgccggcg	gcaatggcgg	cgcggcgccg	aaggcgagcg	cggccgggta	caccgacggc	2640
5	gccacggggc	ccggcgcgga	cggcggaac	ggcgcgatg	gcggaagc	cggtagcggc	2700
	ggggcgggcg	aaaacggcct	aaacagcggg	gccatgctgc	cggcgggcg	caccgtagga	2760
	aaccccggtg	ccggcgcaaa	cggcggaac	ggcggaacg	cggcgctcg	cggcaccgga	2820
	ggcaaggccg	gcaccggctc	cttgacgggc	ttggacggca	ccgacggcat	cacccccaac	2880
	ggcggtaacg	gcggaatgg	cggcaacggc	ggcaaggcg	gcaccggcgg	caacgggagc	2940
10	ggcgcgggcg	gcggaacgg	cggcaacggc	ggctccggcc	tcaacggcg	tgacgcggc	3000
	aacggcgggc	acggcggtgg	ggcgctgaac	caggccggct	tcttcggcac	ggcgggcaaa	3060
	ggcggtaacg	gcggaatgg	cggtagccgg	atgatcaacg	gcggcctcgg	cggcttcggc	3120
	ggcgccggcg	gtggcgcgcg	cgttgacgtc	gccgcgacaa	cggcgggcg	tgggcggaat	3180
	ggcggtggcg	gcgacttcgc	tagcacgggg	tgggttgcc	caggcgcgcg	cggcggtccc	3240
15	ggcgcgggcg	gcgacttcgc	tagcggtgtt	ggcggtgtcg	gcggcgccgg	cggggacggc	3300
	ggtgccggcg	gggtcgccgg	cttcggcgcc	caggcgggca	tcggcgggga	agggcgacac	3360
	ggcggaacg	gcggtagcgg	cggcgacggc	ggtagcgggc	tttccttagg	cggcaacggc	3420
	ggcctcgccg	gcaacggcg	gctctccgag	actgggtttg	gcggcgccgg	cggcaacggc	3480
	ggctacggcg	gtccgggagg	ccccgaaggc	aatggcgggc	tcggcggaac	cggcgccggc	3540
20	ggcggaacg	gcgccgtcag	caccacgggc	ggcgacggcg	gcggccggcg	caaggcgggc	3600
	aacggcgggc	acggcgggaa	cgtcggtttg	ggcggtgacg	ccggctccgg	cggcgccggc	3660
	ggcaatggcg	gtatcgccac	cgacgcgggc	ggtgccggag	gggcgggtgg	cgtggtgggt	3720
	aacggcggtg	gcagcaaaa	cacgaccacc	ggcaacggcg	gctccgggtg	tgccggcggt	3780
	aatggggggc	ctggcctcaa	cggcgccggc	ggtgctggcg	gggcggcgcg	caacggcggt	3840
25	gtcgccggcg	tgctccttcg	caacgctgtg	ggcgccgacg	gcgggaacgg	cggcaacggc	3900
	ggccacggcg	gcgacggcac	gacggcgccg	cggcgcgga	agggcggaac	cggcagcagc	3960
	ggtgccggcg	gcggctcagg	cgtcgtcaac	gtcacccggc	gccacggcg	caacggcgcc	4020
	aatggcgggc	acggcgggca	cggctccggc	ggcgccggcg	gccagggcg	tgccggcgcc	4080
	agcgccggcg	acggcgggca	cggcgccggc	gccacccggc	gcgacggcg	caacggcgcc	4140
30	aacggcgggc	actccggcaa	cagcacccgg	gtcgcggtg	tgccgggtg	tgccggcgcc	4200
	ggcgccggcg	acggcgccgg	cacttccagg	gcccggcgcc	acggcgccag	cggcgccagc	4260
	ggtggcagcg	gcaccacggg	cggcgccggc	gcggccggcg	gcaacggcg	cggcggtgct	4320
	ggcgggggcg	gcctgagcac	agggcagtc	ggcgcccgac	ggcgccagcg	gtggtgccc	4380
	tggaacggcg	ggcgctgggt	cggcgccgca	ggcgccggcg	ggtggtgccc	gtggcaacgg	4440
35	cggtagccgg	ggcaacgggt	gcggtggcga	tgccggcaac	gccggctcag	gcggcaatgg	4500
	cggcaaggcg	ggcgacgggt	tcggccctgg	ctccacggcg	ggcgccggcg	gcaaggcgcg	4560
	cgtggtggcg	aacggcggtt	ccagcaacgg	caacgctcgc	ggtggcaacg	ccggtaa	4617
	<212> Type : DNA						
40	<211> Length : 4617						
	SequenceName : SEQ ID 530						
	SequenceDescription :						
	Sequence						
45	-----						
	<213> OrganismName : Mycobacterium tuberculosis H37Rv						
	<400> PreSequenceString :						
	atgtccttcg	tggtcacagc	accgcccgtg	ctcgcgctcg	cggcgctcga	tctggggcgg	60
	atcgcgctca	tgatcagcga	ggccaacggc	atggcagcgg	tccgaacgac	ggcggtggcg	120
50	cccgccggcg	ccgacgaggt	ttcgccggcg	atcgccggcg	tggtttccag	ctacgcggcg	180
	gactatcaaa	cgtgagcgt	ccaggtagcg	gccttccacg	tgacgttcgc	gcagacattg	240
	accaatgcgg	ggcagctgta	tgccggtcgt	gacgtccggc	atggcggtgt	gttgaaagac	300
	gagcagcagg	tgctgggtgt	gatcaatggc	cccaccacga	cgttgggtgg	tcgtccgctg	360
	atcgccgatg	gcacccacgg	ggcgccgggg	accgggcaga	acggtggggc	ggcggaatc	420
55	ttgtggggca	acggcggtta	cggcggtccc	ggggctcccg	gacagccggg	cggccggggc	480
	ggtgatgccg	gcctgttcgg	ccacggcggt	catggcggtg	tcggggggcc	gggcacggcc	540
	ggtgcccgtg	gcaccgcggg	cctgcccggg	ggcaacggcg	ccaacggcg	aagcgccggc	600
	atcgccggcg	ccggcgccgc	cggcgccgca	ggcgccgtgc	tattcggaac	cggtaggtgc	660
	ggcgccggcg	gtggtccggc	cggacttggg	ggctccggcg	ggacggggcg	cgcgggcgat	720
60	gctgccgggt	ccgcggcgcg	caccggcgcc	atcgggggca	tcggcgccat	cggcgccggc	780
	ggcggggtcg	gcggccacgg	ctcgccgttg	ttcgccacg	ggggaatcaa	cggcgatggc	840
	ggtaccggcg	gcattgggtg	ccaggcggtg	cgtggcgggc	acggctgggc	cgtgagggc	900
	atcacggctg	gcattgggtg	gcaaggcgcg	caggcgccgg	acgggggagc	cggcgccggc	960
	ggcggggatc	gtggttcggc	gggtgggatc	ggcgccagcc	aggggtgcgg	tgggcacggc	1020
65	ggcgacggcg	gccaggcgcg	cgcggcggtg	agtggcgggc	ttggcgccgg	cggcgccagg	1080
	gccggcgccg	acggcgccgc	gggcggccat	ggcgccactg	gcggtaacgg	cagcatcgcc	1140
	ggggccggcg	gcaatggcg	taacggcgcc	cgcggcgccg	ccggtagcat	ggccacggcg	1200

5	ggaagtgatg	gcgggcaatgg	cggcgggcggc	ggcaacggcgg	gcgtcgggtgt	tggcagcgcc	1260
	ggagggggccg	gcggcaccgg	cgggtgacggc	ggggcgggccg	gggcggggcgg	cgcgcggggc	1320
	cacggctact	tccaacagcc	cgcgccccaa	gggctgcccc	tcggaaaccgg	cgggaccggc	1380
	ggcgaaggcg	gtgccggcgg	cgcgggtgga	gacggcgggc	agggcgacat	cggcttcgat	1440
	ggcgccgggg	gtggcgacgg	cggccccggc	gggtggcggc	gcgcggcgcg	tgacggcgagc	1500
	ggcaccttca	atgcccagc	caacaacggc	ggcgacgggtg	gtgccggcgg	tgttggggga	1560
	gccggcgggca	cggcgggcac	gggtggggtc	ggcgacgggtg	gggggtcgcg	gggggactcg	1620
	ggccgcggcg	gcgacggcgg	caacgcggcg	cacggcggcg	cgcgcccaatt	ctccgggtcg	1680
	ggcgccctacg	gcgggtgaagg	tggcagcgcg	ggcgccggcg	gcaacgcggg	tggcgccggc	1740
10	accggtggca	ccgcggggctc	cggcggtgccc	ggaggtttcg	gcgggcaacgg	tgccgatggc	1800
	ggcaatggcg	gcaacgggtg	caacggcgcg	ttcgggcgaa	ttaacggcac	gttcggcacc	1860
	aacggtgccc	gcggcaccgg	cgggctcgcg	accctgctcg	gcggccacaa	cggcaacatc	1920
	ggcctcaacg	gggcccaccg	cggcatcgcg	agcaccacgt	tgaccaacgc	gaccgtaccg	1980
	ctgcagctgg	tgaataccac	cgaagcgggtg	gtattcatct	ccttaaacgg	cggccaaatg	2040
15	gtgcccgtgc	tgctcgacac	cggatccacc	ggctcggtca	tggacagcca	attcctgacg	2100
	cagaacttcg	gccccgtcat	cgggacgggc	accgcgggtt	acgcggcgcg	gctgacctac	2160
	aactacaaca	cctactcaac	gacgggtgat	ttcgggcaatg	gcctttctcac	cctgccgacc	2220
	agcggttaacg	ttcgtaacctc	gtcatcaccg	ggaaccctgg	gcaacttctt	gtcgagatcc	2280
	gggtcggttg	gcgtcttggg	aatcgggccc	aacaacgggt	tcccgggcac	cagctccatc	2340
20	gttaaccgca	tgcccggcct	gctcaacaac	gggtgtgctca	tcgacgaatc	ggcgggcac	2400
	ctgcagttcg	gtcccaaacac	attaaccggc	gggtatcacga	tttctggagc	accgatttcc	2460
	accgtggctg	ttcagatcga	caacggggcg	ctccgggtgat	gttcgactcc	gttcgactcc	2520
	ggcgccatca	acggaaccat	cccgtcagcc	ctcgccagcc	tgccgtccgg	gggattcgtg	2580
	ccggcgggaa	cgaccatttc	gggtctacacc	agcgacggcc	agacgctgtt	gtactcctac	2640
25	accaccaccg	cgacaaacac	cccatttgct	acctccggcg	gcgtgatgaa	caccgggcac	2700
	gtccctctcg	cgcagcaacc	gatatacgct	tcctacagcc	ccaccgccat	cgggacgacc	2760
	acctttaact	ga					2772
	<212> Type : DNA						
	<211> Length : 2772						
30	SequenceName : SEQ ID 531						
	SequenceDescription :						
	Sequence						
	-----						
35	<213> OrganismName : Mycobacterium tuberculosis H37Rv						
	<400> PreSequenceString :						
	ttgatcggca	acggcggggc	cggcggggtcc	ggggcgcccc	gcgccatcgg	tggggcgggc	60
	gggcccgcgg	ggttgatcgg	tgtcggaggt	gcggcgggg	ccggtgga	ctccgcggtc	120
	gcgggtgtca	tcggaggggc	cgggtggggca	ggcggggctg	ccctgctgtt	cgggtgccgg	180
40	ggggcgggcg	gggcccgggg	ttccggcggt	tccggcgag	ctgggtgggc	cgggtggcgcc	240
	gggtggggccg	gcgggctgtt	cgcagcgcg	ggcagcgcg	ggttcggcg	gttcgcatcg	300
	acggggcaccg	tgggggccgg	cggcaccgg	ggggtggtg	ggttgttcg	cagcgcgcg	360
	gtcggcggtg	ctggcggggg	agccgggtcc	ggcggtaccg	gtgggggttg	tgggacgggt	420
	ggggcgggag	ggctgttcgc	tagcgcgcg	gctggcggg	cggcggggtc	cggcggtacc	480
45	gggtggggctg	gtgggacggg	tggggccggc	gggctgttcg	gagcgggtgg	cgttggcggg	540
	ctcgccggcg	aaggcaacca	caccggcggg	cacggtgggg	ccggtggcag	cgccggcctg	600
	ctcgcccttg	gcgacggcgg	cgttggcggg	gccggcgggg	ccgctaccac	cgggaaccgg	660
	ggggcgggcg	gggcccgggt	caaggccggc	ctgctgttcg	gctccgggtg	ggccgggtgg	720
	tccgggtggg	ctgcccggac	cttcgggtgac	accggttaact	cggcgggggc	cgggtggggcg	780
50	ggtgggcaagg	ccggcctgct	gttcgggtcc	ggtggggccg	gtgggtccgg	cggcgctggg	840
	ggcttcgcca	acggctctac	cggcggtgcc	ggcgggggcg	gcggcggggc	cgggctgac	900
	ggcaacggcg	gcaacgggtg	cagcgcgcg	acgtcgggtg	ccaccggggg	ggccgggaa	960
	ggcggtgccc	gcggcgccgg	cggcgggggc	gggctgatcg	gcaacggcgg	caacggcgcg	1020
	agtggcgga	tggggcgatgc	cccgggcgcg	accggcgctg	gcggcatcgg	tgggtgtgtg	1080
55	ttgggttttg	acggcgccaa	cgcggcgggc	agcaccacac	cgttcacac	cgcgcagcag	1140
	caggcggttg	ccgcagtcac	cgcggcccat	caggccgtga	ccggcgcgcc	gctgatcggc	1200
	aacggcgcca	acggcgcccc	gggcagcggg	gcccccggg	ggcacggcgg	gtgggtgttc	1260
	ggcgggcgag	ggaccggcgg	gtccggcgct	agcggcgggg	cggcgga	tggcgggg	1320
	ggcgggatct	tgttcggcgc	cggcgggggc	ggcgggcgcg	gcggggccgt	cacgggaacc	1380
60	ggcgccaccg	gcgggtccgg	tggggccggc	gggtggagct	tgtgttttg	ggccgggtgg	1440
	gccgggtggg	ccggcggggt	cagcgggatt	ggcggggttc	cccgggcgcg	ggccgggtgg	1500
	cccgaggggg	ccgggtgggt	gttcaacggc	gcggggcgcg	cgggtccggc	cgggtccggc	1560
	gtcagcgggc	gggctggcgg	ggaggggcgg	gccggcgggg	ccgggtggct	gttcgcggt	1620
	ggcgggggcg	gcggggcgcg	cggatcgggc	aacaacgtcg	ggggggccgg	cggggccggg	1680
65	gggggtcggtg	ggctgttcgg	ggccggcggg	gccggcggtg	ccggcgcgcg	cggtagcggt	1740
	gctggcgaca	gtggggccgg	cggcaacggc	ggctgtcg	ccccgggtct	cgcggcggt	1800
	gccggcggtg	gcggcgggca	gggttttgac	accggcgggg	ccggcgggcc	cggcgcgac	1860

```

gcccggcctgc tgggtcggtc cggcgggggtc ggaggtgccc ggggattcgg cctcactacg 1920
gggtgggcctg gggcgggccg cggcgacgcc ggcttctgt tccgctccgg cggcgctggc 1980
ggggccggcg gctccggccg aaccgacctc ggccggcgtg gggagccgg cggcaaggcc 2040
gggctgatcg gcaacggcgg taacggcggg gccggcgggg ccggcgggaa cggcggcggg 2100
5 gacggcgggg ccggtggagc cgccttcggg ctcggtaacg gcggaacgg cggcaacggg 2160
gggaccggca cgtccgcggg cagccccggt gccggcggcg ccggtggttc gctgatcggc 2220
ggggaggggc tgcccgggct gctgccttag 2250
<212> Type : DNA
<211> Length : 2250
10 SequenceName : SEQ ID 532
SequenceDescription :

Sequence
-----
15 <213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
atgtcgtttg tgattgctgc gccggaggcg ttggtcgagg tgcgttcgga tctggcgggg 60
attgggtcgg cgttggcgga ggccaacgcc gccgcgttgg ccccgacgac ggcgttggtg 120
gccgcgggtg ccgatgaggt gtcggcggcg atcgccggcg tgtttgccgc gcacgggcag 180
20 gcgtatcaga cggtttagcg ccaggcgtcg gcgtttcatg ccagtttgt gcaggcgttg 240
actggcggcg gcggggcgta tgcggctgcc gaggccgcca acgtctcggc ggcgcagagc 300
accgaccgag cgttgcctga tctgatcaat ggcccaacc aggcgttggt gggcgctoca 360
ctgatcggtg atggcgccaa cggcggggcg gggcaagacg gcgggcccgg ggggttgctg 420
tacggcaacg gcggcaacgg cggcactagt accaccgccg ggttgggcgg cggcaacggg 480
25 ggcgcgcgcg ggctgatcgg caacggcggg gccggggggc gcggcggggc cggcgccggc 540
ggcggaatg gcggtgcggg cgggtggctg tatggcaacg gcggcgccgg cggggccggg 600
gggacatcgg tgatacccgg tgtcgccggc ggcaatggcg gggctggcgg gtccgcggga 660
ctgtggggta ccggcggggc cgggtggcga gccggcaacg gccggtcggg gccagtcac 720
gtcgccggca gcgcggggcg caacggtggc gctggtggcg ccgcggggtt attcggtgac 780
30 gccggggccg gtggcaacgg cggcaaggcg ggtgctggcg gcgcgcctt tagcatcaac 840
ttcaccgcag gcgatggcgg tgcgggaggt gccggtgggt ccggcggcca cgcattgctg 900
tggggcgcgg gcggagccgg gggtaacggc ggatccggcg gcacgggggg tgccggcggc 960
agcaccgctg gcgctggcgg caacggcggg gccggggggt gcggcggaac cgggtgggtg 1020
ctcttcggga accgcgggtg cggcgggcac ggcccgcccg ccggaaacgg cttagccggg 1080
35 ggtaatggcg tcagcagcag cggcggcggc ggtgccggtg ggaccggcgg ggcgggtggg 1140
gacggtggcg ccggcggggc cggaggcaac gccaggtgtg ggggcgtcgg tggcgccggc 1200
ggggccggcg gggacgggtg cgcggcgggg gccggcgcca aaggcggtc tggcctcagc 1260
ggtaaccagc gcacggcgcc cggcgcggtg gcggcacggg cggcgccggc 1320
ggcgagggcg gcgcgcgcgg gctgctggtg ggcaccggcg ggcacggcgg tgacggcggg 1380
40 gccggcgggc ccgccgtcaa gggcggtgac ggcggggccg ccgccggcac gggcatcgcc 1440
ggcgctggcg gccctggcgg cgcggcgccg agcgttgga cgggtggtga cggcgggggc 1500
ggggccgcgg ccccgcccgg ttggtggttc ggcatggcg gggctggcg gaacggcggg 1560
gccgcggccg ccggcgggcg gggcgccaa gccggcggtg gcggcgggaa cggcggcaat 1620
ggcggaacg gcggcaatgg cggcaatggc ggcaacggcg ccaccggggg gtggctgtac 1680
45 ggcaacggcg gggccggcgg ccaggcgccg accgcgggag ccggcggaag cggcgctaac 1740
ggcgtcagca gcaccaatgg cggcggaacg gggggatcgg cgggaccggt 1800
gggtccggcg ggcccggttg caacgccggg ctggtggggc tgggcggcgc cggcgggcac 1860
ggcgctccg gcggcgccgg cgatagggcg ggcgtggcg gtaccgggtt cataagcagt 1920
gacggcggtg ctggcggtga tggcggtgat ggcggcaacg gcggggccgg cggcaccggt 1980
50 ggcgtgttgt tcggtgcccg cggcaatggt ggccccggcg ggtctggcg tgcccgcgat 2040
attggcgga acggcgggcg cggtaacggc gggggcacgg acgggaacgg cggtaatggc 2100
gggtccggcg gcggcgcccg cagcgcggtg gacggcgcg gggctggcg caacggtgcg 2160
tggtgtttcg gcaatggcgg cgcggcgggg ggcggcgga aaggcggcaa cggtgccggc 2220
ggcgggcttg gcggcggttc attcgccctc cccggcctga acggcagcgg cggcgacggt 2280
55 ggcgacggcg gtaacgggtg ccccgcgggg gtgctgtatg gcaatggcgg cgcggcgccg 2340
caggggtcaa gcggtggcat cggcgggccc ggcggccacc gcggtgcccg cggcaaggcg 2400
ggtgatggtg gcgatgcgca gctgatcggc gacggcgcca atgggggcaa cggaggcgcg 2460
ggcggcaccg ggggcacccc gggggccggc ggaccggcg ggtccggcg gcttggaagg 2520
60 ctgctgttcg gccaaaccgg caccgctggc gtgtcgccgt ag 2562
<212> Type : DNA
<211> Length : 2562
SequenceName : SEQ ID 533
SequenceDescription :

Sequence
-----
65 <213> OrganismName : Mycobacterium tuberculosis H37Rv

```



<400> PreSequenceString :

	atgtcctatc	tcgtcgtggg	gccggagttg	gtcgcagcgg	cggcaacaga	tttggcgaac	60
	atcgggttcg	cgattagtcg	agccaacgcg	gccgcggcgg	caccgaccac	ggcactggtc	120
	gcagccggcg	gcgacgaggt	atcggcggcc	atagccgcgt	tggtcggagc	gcattgctcg	180
5	gcatatcaag	cgttgagtgc	ccaggcggcg	atgtttcatg	aacagtttgt	cggggccctc	240
	gccgcggcg	gtaactccta	cgccgtcgct	gaggcggcaa	ccgcgcaatc	ggttcagcaa	300
	gatctgctca	acctgatcaa	tgcccccacc	caggcgctgt	tggggcgctc	gctgatcggc	360
	aacggcgcca	acgggctgcc	gggtacgggc	cagaacggcg	gcgacggcgg	gattctgtac	420
	ggcaacggcg	gcaacgggtg	gtccggcggg	gtcaaccagg	ccggtggcaa	tggcgggaat	480
10	gctgggctgt	ggggcaatgg	cggtacgggc	ggagccggcg	ggaacgccac	cactgcccgc	540
	cgcaacggct	tcaacggggg	cgccggggga	agcggcggtt	tgctgtgggg	caatggcggt	600
	gccggcgggg	ccggtgggaa	cgccggctcg	gctccgctcg	tgggcggggg	gggcaccacc	660
	ggtgggcggc	gcggggaacg	cggcggcgcc	gggttgttct	acggtttcgg	cggcgccggg	720
	ggagccggcg	gggtggcgcg	ggtggcaccg	agcaccggcc	cctcgatggg	catcctcccg	780
15	gccggcgggtg	tggcggggcc	tgggtggctc	ggcggggcga	gcgcgcttgc	cttcggctcc	840
	ggcggcgctc	gcggtgcccg	tggcttgggc	gggcccagcg	atggcaccgt	ccaggggggtg	900
	ggcggcttcg	gcggtcaggg	cggcaacggc	gggcagagcg	gcttggttgt	tggcaacgcg	960
	ggagccggcg	gggcaggcgc	tgccggcgga	gccggcaccg	gcgacaccga	gagcttcggc	1020
	ggccacggcg	gggcccggcg	tgatggcgcc	gctgttggtc	tgatcggtaa	cggcggggcc	1080
20	ggcggcaccg	gatctcccgg	cgctgtgggt	ggttggtaac	gcgcgctcgg	tggtctgggt	1140
	ggcggcggca	gtcccggggg	tctgttgtac	ggcaccgggg	gggcccggcg	caatggcgga	1200
	ccgggttggtg	tcggcggtgac	tggcgcgacg	gtgggctttg	ccggctccgg	cggtttcggc	1260
	ggtgcggggg	gcacgcggca	gctgtttggc	acgggtggca	tgggtggtag	cggcggtggg	1320
	ataggcgctg	gcaccacgac	cgtggtgccc	cccgcagctc	ccccggtggg	tggcacaggc	1380
25	ggcaatggcg	gtcgcgcggg	gctgctgttg	ggtgtgggtg	gcattggcgg	taatggcggt	1440
	gccaccagcg	tcggcgggac	gctctacggc	gctgttgtaa	acggcgggca	cggcggttgt	1500
	gtgtggggca	acggtggcac	cggcggggagc	ggtggcgccg	gcggggcggg	cagcgtcggc	1560
	aacggcggtg	cgggtggcaa	cgcggcactg	ctgttcggca	acggcggggc	ggcgggggcc	1620
	ggcggcgccg	gcggcacatg	tgccggcgga	gccggcggtc	tcggcgcggt	tctgtttggc	1680
30	aacggcgggg	ctggcgggag	cggtgcccc	ggtggcatcg	gcgcgggtgg	caatggcgga	1740
	aacgcgctgc	tggctcgcaa	cggcggaac	ggtggggcag	gtaccggtgg	ggctgctggc	1800
	ggtgcgggtg	gctcggcg	gttgctattc	ggcctaaatg	ggatgcccgg	gccgtga	1857

<212> Type : DNA  
 35 <211> Length : 1857  
 SequenceName : SEQ ID 534  
 SequenceDescription :

Sequence  
 -----

40 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :

	atgaattttt	ctgtactgcc	gccggagatc	aattcagcgc	tgatattcgc	cggggcaggg	60
	ccggaaccga	tggcggcgcc	cgcgacggcc	tgggacgggt	tggccatgga	attggcctcg	120
45	gcgcgagcct	ctttcggtc	agtgcacatc	ggactcgtgg	gcggggcggtg	gcagggcgcg	180
	tcgtcgtcgg	cgatggcgcc	agcggcagcc	cgttggttgc	cgcgcgcgcg		240
	gtccaggccg	agcagacggc	cgctcaggct	gcggcgatga	tagccgagtt	tgaagcggtc	300
	aagacggcgg	tgggtgcagc	gatgctgggt	gcggccaacc	gtgccgacct	ggtgtcgctg	360
	gtgatgtcga	acctgtttgg	acagaacgct	ccggcgatcg	ctgccattga	agccacgtac	420
50	gagcaaatgt	gggctgcccga	tgtgtcggcg	atgtctgcct	accatgcggg	ggcatcggcg	480
	atgcgctcgg	cgctgtcccc	gttcagtaaa	ccgctgcaga	acctggctgg	cttgccggct	540
	tgggttgcca	gcggcgcgcc	tgccggcgcc	atgaccgcag	ccgcaggcat	accggcgctt	600
	gcggggcgga	ccaccgccat	caacctgggc	atagccaacg	tcggcggtgg	caacgtcggc	660
	aacgcccaaca	acggccttgc	caacatcggc	aacgcccaacc	ttggcaacta	caatttcggg	720
55	tccggaaatt	tcggtaactc	caatatcggc	tcagcaagcc	tgggtaataa	caacatcggc	780
	ttcggaacc	tcggcagcaa	caatgtcggc	gtgggaaacc	ttggcaatct	caacaccggg	840
	tttgccaaca	cggccttggg	caacttcggc	tttggaaca	ctggcaacaa	caacatcggc	900
	atcggtctta	ccggcaacaa	ccagatcgga	atcggcgggc	tcaactcggg	caccgggaat	960
	ttcggtattg	tcaactcggg	cagcggaaac	gtcggcttct	tcaactcggg	caatggaaac	1020
60	tttggtcatc	gaaactcggg	taatttcaac	accggtggct	ggaattctcg	acacgggaac	1080
	acgggcttct	tcaatgcggg	ctcggttaac	accggtatgt	tggacgtcgg	caacgcgaac	1140
	acaggcagct	tgaacacggg	cagttataac	atgggcgact	tcaatccggg	gtcgtccaac	1200
	accggcacgt	tcaacacggg	aaatgctaac	acgggtttcc	tcaacgcggg	aaatatcaac	1260
	actgggtgtc	tcaatattgg	ccacatgaat	aatgggctgt	tcaacacggg	tgacatgaac	1320
65	aatggcgtct	tctaccgggg	cgtggggcag	ggcagcctgc	agttcagtat	tacgacacct	1380
	gatctgactc	tctcccgctc	gcaaataccg	gggatatacg	ttcccgctt	cagtcctcgg	1440
	gcaataacgc	tgccgtcgct	gaacatcccc	gccgccacca	caccggccaa	catcaccgtc	1500

5	ggcgcccttca	gcctgcccgg	gttgacgttg	ccgtcgcttga	acatcccggc	cgccaccaca	1560
	ccagccaaca	tcaccggtgg	tgcccttcagc	ctgcccgggt	tgacgttgcc	gtcgttgaac	1620
	atcccggcgg	ccaccacacc	agccaacatc	accgtcgggc	ccttcagcct	gcccgggttg	1680
	acgttgccgt	cggtgaacat	cccggccggc	accacaccag	ccaacatcac	cgccggcgcc	1740
	ttcagcctgc	cggggttgac	gttgccgtgc	ttgaacatcc	cggccggccac	cacaccagcc	1800
	aacatcaccc	tcggcgccct	cagcctgccc	gggttgacgt	tgccgtcggt	gaacatcccg	1860
	gcccgcacca	caccgcgcaa	catcaccgta	aggggctttc	agttgcctcc	gctgagtatt	1920
	ccttcgtag	ccattccggc	ggtgacggtc	ccgcccatta	cggtgggtgc	ttttaatttg	1980
	ccggcattgc	agattccgga	agtaactatt	ccgcagctga	cgatacccgc	gggtatcaca	2040
10	atcggtgggt	ttagttctacc	tcggatacat	actcaaccga	taacgggtcgg	ccagattggc	2100
	gtggggccaat	ttggcctgcc	ctccataggg	tgggatgttt	tcctaagcac	acctaggata	2160
	acagtaccgg	cttttgggaat	accctttacc	ctacaattcc	agaccaatgt	gcctgcgctt	2220
	cagccgccc	gcgccggggt	tagtactttc	accaatggcg	ccctcatctt	cggtgagttt	2280
	gacttacacc	aattggtgg	tcacccatac	acattgaccg	gcccatttgt	catcggttca	2340
15	ttctttctgc	ccgccttcaa	cataccgggg	atcgatgtcc	ccgctatcaa	cgatgatggc	2400
	ttcaccctgc	cgcagatcac	caccccagct	atcaccaccc	cggagtccgc	gatccctccg	2460
	atcgccgtgg	gcggtctcac	tctgcccag	atcaccaccc	aggaaatcat	caccccggag	2520
	ctaaccatca	cggggtatcg	cgtcgccggg	ttcaccctgc	cgcaaatcac	caccccaccc	2580
	atcaccaccc	caccgctgac	catcgacccc	atcaacctca	ccggcttcac	cctcccccaa	2640
20	atcaccaccc	caccatcac	caccccaccc	ctgaccatcg	accccatcaa	cctcacccgc	2700
	ttcaccctcc	cccaaatcac	caccccaccc	atcaccaccc	caccgctcac	catcgagccg	2760
	atcgccgtgg	ggggcttcac	cacggccccc	ctcaccgttc	ccggcatcca	cctgcccagc	2820
	accacgatcg	gggctctgcg	gatccccggg	gggcccgggt	acttcaactc	gagcacccgc	2880
	ccttcgctcg	gcttcttcaa	ttccgggtgcg	ggcgccaaact	cggtcttcgg	caacaacggc	2940
25	tcgggctct	cgggttggtt	caacaccaac	ccggccgggc	tggtggggcg	ctcggtgat	3000
	cgaacttcg	acgggctatc	ctcggtcttc	ttcaaccctt	gcagcgccgt	ctcaggcttc	3060
	gccaacaggg	gcacccctgc	gttctcggta	gccagcgtcg	tttcgggctt	tgccaatatc	3120
	ggcacciaacc	tgccggggtt	cttccaaggc	accacgtcct	aa		3162
	<212> Type : DNA						
30	<211> Length : 3162						
	SequenceName : SEQ ID 535						
	SequenceDescription :						
	Sequence						
35	-----						
	<213> OrganismName : Mycobacterium tuberculosis H37Rv						
	<400> PreSequenceString :						
	atgttgatg	tagttgcgtc	accgcacttg	atgaccgcgg	cggctaccaa	tctggcggag	60
	attgggttcg	cgatcagcac	ggcaaatggt	gcggcggcac	tcccgactgt	tgaggtgggtg	120
40	gcgcggggcg	ccgacgaggt	gtccacgcag	atcgccggctc	tattcggagc	gcagtgccagg	180
	agctacccaa	ccctcagcac	ccaggcagcg	gcgtttcata	gtcggtttgt	gcaggcggttg	240
	accacggccg	cggcttctca	cgccagcgta	acgcgtcgcc	acttcagggt		300
	gcgctagacg	tgattaatgc	gcccgcggcg	acactgctcg	gacgtccgct	aattggtaac	360
	ggcgccgacg	gatcgacacc	ggggcaggcc	ggcgggcccg	gcgggttgct	gtacggcaac	420
45	ggcggtaatg	gcgcgcggcg	tgggcccac	caggccggcg	gcgcggcgcg	caacgcggcg	480
	ttgatccggca	acggcgggcg	ggcgggcgcc	gggggtgttg	gcgcgggtcg	cggtaaacgc	540
	ggcacggggc	gcctgctatt	cggcaacggc	ggggccggcg	ggcaaggcg	gctcggcctc	600
	gcaggtatca	acggcgggcg	cggcgggcag	ggaggccacg	gtggcaacgc	catcctgttc	660
	ggccagggcg	gtgcccggcg	gccaggtggc	accggcgcca	tgggcgtcgc	cggcaccaat	720
50	cccaccccca	tcggcacccg	agcgccctgc	agcgacggcg	taaatcagat	tgggaacggg	780
	ggtaaacacg	acctcaccgg	cggcgccggg	ggcgacggca	atgcggcgag	caccacccgtg	840
	aacggcgggc	acggcggtac	cggcgggcga	gctaggaact	catctgggtg	taccggtaac	900
	tccttttggtg	gtgcccggcg	cgccggaggc	gacggcgcca	acggcgggcg	cggtggcgct	960
	ggcggggaaag	ccctcaccca	aggcggtgct	accgcccgtta	gtggtgctgg	tggttaaggga	1020
55	ggtaacggcg	aggcttcggg	cggcgccggc	ggcaacggcg	gcaaagggtg	ctttgctcag	1080
	gccaccacca	gcgtgaccgg	gggtaacggc	ggtaacggtg	gcaatggcca	cgacagtaac	1140
	gcgcggggcg	gcgctggcgg	cagcggtggc	gtcgccgggtg	acggcgggcg	tggcgccctg	1200
	ctggccggga	acggcgggcac	cggcggtgcc	ggtggcaacg	gcggtacggg	tggcgccggg	1260
	gcccccgggc	gtgcccggcg	cgccggggcg	aaagccgaca	tcgccaacag	cctcgggcgac	1320
60	aatgccaccg	taaccggggg	caatggcggg	acaggcgggg	acggcgggcg	cgcgctgggg	1380
	accggggggg	ctgggggtgc	cggaggtcta	ggtgggtcacg	gggggtcgag	cgggctgctg	1440
	attggcaacg	gcggcgccgg	tggcgctggc	ggcctcgccg	gtgcggcgcg	cgccggcggt	1500
	gcggggcggtg	agggcggtgc	cggcgggcgc	ggaggcgaa	ctattcccg	cggggcgctc	1560
	accaactccg	ccggcggtga	cggagggggc	ggcggtactg	gcggcaatgg	cggtgacggc	1620
65	ggtgcccggc	gagcccccg	cctcggtggc	cggggcgggg	ccggcggatg	gttgatcggc	1680
	cagtcgggca	gcaccggcg	cgttggcgcc	ggcggtgccc	gtggtgcccg	aggtgcccgt	1740
	ggcgcgggcg	gcagcgggcg	tgcgggtggc	catggcgaca	ctacctccgg	caagaacggg	1800

tcgtctggca cgcggggctt cgacggcaac cccgggcagc cgggctga 1848

<212> Type : DNA

<211> Length : 1848

SequenceName : SEQ ID 536

SequenceDescription :

Sequence

-----

<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

10	atgcattact	cagtgttgcc	gccggagatc	aactcggcct	tgatcttcgc	cggggcgggc	60
	tccggaccga	tgctggcggc	ggcgtcggcc	tgggacgggc	tggaaccga	attagcctcg	120
	gctgctgtct	ctttcggctc	ggtagacagc	gggctggtcg	gcgggtcgtg	gcagggtcgg	180
	tcacggtggg	cgatggcagc	ggcggcagcc	ccgtatgcgg	ggtagctggc	cgcggcggcg	240
15	acccaggccg	agcaggcggc	caccagggcc	caggtagatg	tgggcaggtt	cgaggctgtg	300
	cggctggcga	tggtacaacc	ggcgtcgggt	gccgcccaac	gttccggcct	catatcgctg	360
	gtgatataca	accttttttg	tcaaaacgct	cccgcgatcg	cggccgcgca	agccgcatac	420
	gaggagatgt	gggtctcggg	tgtagcgggc	atggcggcct	accattccgg	ggcgtcggcg	480
	gtcgtctgtg	cgtaaccggc	attcgccctc	ccgctcgggc	ttccggcggg	tctggcggcc	540
20	gggcccgcgg	ccgtggtgac	cgcgtcacc	acggccgtgg	gcataccgac	ttttgccggc	600
	cgggcgatcg	ccgctagcct	eggcttgggc	aacgtcgggt	gtggcaacct	cggcaatgcc	660
	aacaatgggg	tcggccaacat	cggcaacgcc	aaccttggca	acaacaatct	ggggtccggc	720
	aacttcggta	gcttcaatat	cggctcggcc	aacctagggt	gcaacaacat	cggcatagga	780
	aacgcggggc	ccaacaactt	cggacttgca	aacctgggca	atttgaacac	gggattcgcc	840
25	aatgcaggca	tcggcaactt	cggaaattgc	aacaccggca	acaacaatat	cggcaacggc	900
	agctatcgga	tcggccaacat	cggcattggc	ggactcaatt	ccggcaacgg	taacgtcgga	960
	ttattcaacg	cgggtagcgc	caatatcggt	ttcttcaact	ccggcaatgg	caactttggc	1020
	atcgggaact	ccggttaactt	cagcactggc	ctgttcaacc	ccggacacgg	caacaccgga	1080
	ttcctgaatg	cgggctctttt	caatacgggc	atgttcgacg	ttgggaacgc	gaacaccggc	1140
30	agcttcaacg	tcggccacta	caacttcggt	gccttcaacc	cgggcccgct	gaacaccggc	1200
	accttcaaca	cgggcggcgc	caacaccggc	tggttcaaca	cagggaagcat	caacaccggc	1260
	gccttcaaca	taggcgacat	gaataacggc	ttgttcaaca	cgggcgacat	gaacaatggc	1320
	gtcttttacc	tggtgtgtgg	ccaaggcagc	ctgcagttcg	ccatcaccag	ccctgatttg	1380
	acgttccggt	ctctggaaat	accgggaatc	cgttcccgcc	cgttcagcct	gcccgcgata	1440
35	accttgccgt	cgttgacgat	tccggcgggt	acgacgcggc	ccaacgttac	cgtgggtgcg	1500
	tttgattttgc	cggggttgac	ggtgccgtcg	ttgacgattc	cagcggcgat	gacgccagct	1560
	aacatcacgg	tggtgtcggt	tgattttgcc	gggttgacgg	tgccgtcggt	gacgattcca	1620
	gctacaacga	tcacgcacaa	catcacggta	ggtgcgttta	acttgcctca	gttgagtatt	1680
	ccgtcgggtg	cggttccgcc	gatcacgatt	ccggctggca	cagcgttagg	tgctttcaat	1740
40	ctgccgacgc	tgagtattcc	gtcggtgacg	gttccgccga	tcacgattcc	ggctggcacc	1800
	actgtcggcg	gattttacgt	acccacgata	cacaccccg	taataagtac	accccaata	1860
	agtatagcgg	cttttagcac	tccggcgata	gccacgcaag	caaattctgg	tgtcatcaat	1920
	cttccacact	ttagccttaa	cggcattacg	ataactaatt	tggtggtggt	cattccgaac	1980
	aacatcactg	ccttgcaaac	caatatgcc	ggggtattcc	cgcagattgg	cggcttcgct	2040
45	aatacacctc	ctgcctttat	taatactggg	accattaccg	tggttgaggg	tcaaatcaac	2100
	ggcgtcggct	tctcgatcgg	cgaatcaaac	gtcacccctc	tcaccctccc	caacgtcgtc	2160
	atccaaacgt	ggtccctcgg	ggggatctcg	gtcgacgggt	tcaccctgcc	agagatcagc	2220
	acccaagaat	tcaccactcc	ggcgttgacg	atcagtcgga	ttggtgtcgg	tgcatagagc	2280
	ctgccgggata	tcactactca	acagttcacg	accccgaggt	tgaccatcga	cccgatcacg	2340
50	ctgggtgggt	ttacgctgcc	gcagctcagc	atcccggcga	ttaccacccc	ggcgttcacg	2400
	atcgatccga	tagcgtgggt	tggtttcacg	cttccctcaga	tcatacagcc	cagataaacg	2460
	actccacccg	tcgccatcga	cccgatcgga	cttagcgggt	tcaccctccc	ccagggtcaat	2520
	atcccgggaga	tcaccacgcc	agagttcacc	atccagccgg	tggtccttggc	ggccttcacc	2580
	acacccgcac	tcaccatcgc	cagcatccac	ctgccgagca	ccaccatggg	cggattcgca	2640
55	atcccagcgg	ggccgggata	cttcaactcg	agcgcaacgc	cctcgttggg	ctttttcaac	2700
	gccggaatcg	gtgggaactc	gggcttcggc	aacagcggct	cgggactgtc	gggttggttc	2760
	aacacaagtc	ctgttggggt	gctagccggc	tcgggctacc	agaactacgg	tggtcttacc	2820
	tcgggcttct	ccaaccttgg	cagcggcgata	tcgggcttcg	ccaacaccgg	caccctgccc	2880
	tttgccgtga	ccagcttgggt	ctccgggttg	gccaaacatc	gcaacaacct	gtcgggcctg	2940
60	ttcttccaga	gcaccacgcc	ataa				2964

<212> Type : DNA

<211> Length : 2964

SequenceName : SEQ ID 537

SequenceDescription :

Sequence

-----

<213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :

```
5 atgtcgtttg tagtcgtggc gccggaggtg ttggcggcgg ccgcttcgga tctagcgggc 60
  atcgggtcga cactggcgca ggccaacgcc ggcggcgttg cgcgcaccac cgcgggtgtt 120
  gccgcgggtg ctgatgaggt ttccgcggca atcgcgtcgc tgtttggggc gcatggtcag 180
  gcgtatcagg cggtagcgcc ccaaatgtcg gcgtttcacg cccagttcat gcaggcgttg 240
  acgggtgccg gcggggctta tgcggctgcg gaggcggtca acgtctcggc ggccgagagc 300
  gtggaacaag acctgttgcc cgcgatcaac gctcgcctcg agcggatttt tgggcgccc 360
  ctgatcgggt atggcgccaa cggcggggcg ggacaagacg gcggggcccg cgggttgctg 420
10 tacggcaacg gtggcaacgg cggcaccagc acgaccgttg ggatggccgg cggcaacgg 480
  ggtgcccgcc ggctgatcgg caacgggtggg ttccggggcg gcggcggggc cggcgcgggc 540
  ggcggcaacg gcggcgccgg cgggtggcta ttccgcaacg gcggcgccgg cggtgccggc 600
  ggcctcggcg tagcggcccg cgtgcccgcc ggcccgcgcg gtgccggcgg cgcggcggtg 660
  ggcggcgagc cggcggggtt gtggggcccg ggggggtcgg cggggcgggg tgggtgccgg 720
15 gtggctggcg ccggcggttt cgaggggacg atcgggtgcc gcggtgccgg cgggtgtcgg 780
  ggtgccggcg gtgtcggcgg tgcggcggtt gccggcgggg ggctgtacgg cgacgcgggt 840
  gccgggtggg atgggtggtg cggcggtgcc ggccggcacc gcgggttagg caaccgtggc 900
  ggcggcgagc cgcggcggtg cgcggcggtg cgggggtggt cgcggcggtg cgcggcggtg 960
  tggggcgggc gtggtgccgg cgggggtggg gggaccggcg gcggcgccgg cctcgggtgt 1020
20 cagagcggtc ccttcagtag tagcttaagt ggcctttccg gtggcgacgg cgcgcggcgg 1080
  ggggcgggtg gcgcgggtgg cgcgggtggc accggtgggt ggctgtatgg cgcgggtggg 1140
  gccggcgagc cggcggggga cgggtgtacc ggcgggtcagg gcggcgccgg cgcgcgggt 1200
  gtatttagcc tattcggatc cgtggcgggc cccggcgcca acggcgcggt cggcgcggtc 1260
  ggcgggtgct gcgggtgctg cggggcggtg ggcttgttcg gcgtcggggg cctcggcggg 1320
25 gcgggtggcg acgcgggtga ctccggcgaa ggccgcttcg gcgggcgggg gctcgcgggc 1380
  gggctgttgc gcaaccccg ccaacggcgcc gtccggcgga tccggcgcca cgcgcagacc 1440
  ggcggcgccg gtggggcgcg aggcacgggt ggggcgggag gcaacgggtg gtggttgttc 1500
  ggcaatgggt gtgccggcg ctccgggtggc gacggcgcgg ccgcggcgcc tggcggtgct 1560
  ggcaacttgg gctcggcgcg ggttatcaac gcccccgccg gtaaccccg cagcgggtcg 1620
30 gtccggcggt cgggtgccgg tgggtgccgg ggcaccggcg ggctgttcgg cgacgggtgg 1680
  gctggtgggg ccggtggtgc cgcgcggcgg ggccgcttcg gcggcatcag cgcgcggcgg 1740
  ccctcggcgg gcagtggagg cgcctatggg gggggcggtg gtgttggcg caacggcggg 1800
  ctgttgggga ctggtggcgc cgttggagtc ggcggcgcgg gcggggcgcg cggcgacgga 1860
35 ggcggcgggc gcggcaatgg cgcggcgccg agcggcgccg gcgggtgggt gttggggacc 1920
  ggtggtgccc gtggtgccgg tggtaacggc ggcaatggcg gaaaagccgg ttttagccct 2040
  gggcgagcca acttcggtct caacggcgcc ggtggtggtg gtggtgtcgg cggcaacggc 2100
  gccacgggac cctggctggt cggcgacggc ggcggcgccg caggcagcac cgtgtccggg 2160
  gcggcggggt gtcacggcgg cgacggccag ctgatcggca acggcgggca cggcgggggc 2220
40 ggcggcgacc ggtgcccga cgggtcaggt ggtgccggcg gcctcagcgg gctgctgttc 2280
  ggcgagccgg ggcggaacgg gtag 2304
```

<212> Type : DNA

<211> Length : 2304

SequenceName : SEQ ID 538

45 SequenceDescription :

Sequence

-----

50 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :

```
atgtcgtttg tgatcgcgaa ccccgagatg ctggcagcgg cggcgaccga tttggccggc 60
  atccgggtcg cgatcagcgc cgcgaccgcg gcggcccgcg ccccgacgat ccaggttgcc 120
  gcggccggcg ccgacgaggt gtcgctggcc atctcggcgc tgtttggcca gcacggccag 180
  gcctatcagg cgctcagcgc ccaggcgacg atctttcacg accagttcgt gcaggccctg 240
55 acctccggcg gcaacctgta tgcggccgcc gagagccaca ccgtcgagca gatggtgttc 300
  aacgcgatca acgcgcccac ccagacactg ttccggcccg cgtgatcgg cgacggcgcc 360
  aacgggacgg cggagaaccc ggacggccaa aacggcgggc tgcgtgttcg caacggcggg 420
  aacggcttta ccagacgac cgcgggggtg gccggcgcca acggcgcgag cgcgggggtg 480
  atcggaacg gcggggcgcg cggcgggcgg ggggcggcg cgcggcgcg cctcggcggg 540
60 aacggcgggg ggtgttacgg caacggcggg gccggcgcca tccggggcg ggccacggga 600
  accggtgggt acggcggggg cggcgggggc ggcggcggg cctggctgtg gggcaccggc 660
  ggggcggcg gagcggcgcg tgacggcgcg tgggtgttcg gcgacggcg ggccggcggg 720
  accggcggga acggcgcgag cggttttaac agcttgacct cttcgggtcg cggcgcgggc 780
  ggggcgggtg ggcacggcgg gctgttcggc gccggcggga ccggcgggac cggcgcggtg 840
65 ggcgggcaaa acaccgagac cggcccgggc gccagcaacg gcggcgcggg cggcgcggtg 900
  ggcggcgggc ggtacgtggt cggcgatggg ggcggcgcg ggaccggcg ggccggcggg 960
  aagaattcca gcgggtggcg caccctcacc gggggcaccg gagggacggg cggggcgggc 1020
```

```

5  gggggcgccg ggtggctcta cggcagcggc ggcgcggcg gtgcggcgcg cgccggcggg 1080
   ctcaacaacg ccggtggtgc caccggcggc accggcggtg ccggcgaggc cggcggtctt 1140
   ggagcgtggc tgtacggcaa cggcgggggc gccggggccg gcggcaacgg cggcaacaat 1200
   accagcgccg gcaccggtgg tgtcggggct agcggcgggg ccggcgggaa cgccgggctg 1260
   atcggcgccg gcggccacgg cggggccggc ggcgcggcg gaaaccaaac cgggtggcgtg 1320
   ggcaacggcg gggccggtcg gaacggcggc gccggcgggg ccgggtggtca gctgtacggc 1380
   aacggcgggg acggcggcaa cggcgggggc ggcggggcca acatcgccgg cggcaatggc 1440
   agcgacggcg gcgcgcggc ccacggcggg gccggcgggg gcgcccggct gatcggagcc 1500
   ggcgggcacg gcggggacgg cggcgccggc ggggaacacc ccggcagaag ggccgacggc 1560
   atcgccggcg ccggcgggga cggcgggcaac gccgggaatg gcggcttgct aagcggcaac 1620
   gccggggccg gcggccacgg cggggcgggc gggagcagca ccgcgaccac caccaccgga 1680
   acacccccaa cgggtgcacg gggcgggcaat gccggcaacg gcggggcgccg cggcacggcc 1740
   ggggtttacc gcagcgcgcg catcgcgccg aacggcgggg ccggcgcgac cggcggtaac 1800
   gccggtgtcg ccttctcggg tggcagcagc ggcggactgg gcggtaacgg cggcagcggg 1860
15  ggcctcgccg gcggcgcgcg gtcgctcttc ggcaatggcg gggcgggcgg tgtcggcgca 1920
   accggcgga aacggcgga cgggtatcgg ccgcgagcg tgggtggcaa cggcgggcaa 1980
   ggcgcggttg gtcggcgcg cgggcttgcc ggcgagatcg gcaacggcgg tagtgggtgg 2040
   tcggcggttg ccgggggcaa cggcgggacc gcgcataccg ccggcaacgg tggcaatggg 2100
   ggtgcggcg cggtcgcgcg caacgccag ctcatcgga acggcgggca cggcggtggc 2160
20  ggcgggaacg gcgggaacgg cgccgacggc acctaa 2196

```

<212> Type : DNA

<211> Length : 2196

SequenceName : SEQ ID 539

SequenceDescription :

25

Sequence

-----

<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

```

30  atgccggggc ggttcagaaa cttcggtagc caaacctgg gtagcggcaa catcggcagc 60
   accaacgtgg gcagcggcaa catcggcagc accaacgtgg gcagcggcaa catcggcgac 120
   acgaacttcg gtaacgga aaacggcaac ttcaactttg gtagcggcaa taccggcagt 180
   aacaacatcg gtttcgga aaacggcagc ggaatttcg gtttcgga aaacggcgaac 240
   aacaacatcg gtagcgggct caccggcgat ggtcagatcg gtagcggcg actgaactcg 300
35  ggcagcggaa acatcgggtt cgggaactcc ggcaccggaa acgtcgggtt gttcaactcc 360
   ggcaccggca acgtaggtt cgggaactcc ggtactgcca aactggatt cgggaacggc 420
   ggcaacatcg acaccgatt ttggaacggc ggcagcaca aactggcct cgtcaacggc 480
   ggcgcgggca acacaggtt ttcgacgct ggcaactaca acttcggcag tcttaacggc 540
   ggaaacataa actcaggtt tgggaattcg ggtgacggca acagtgggtt cctcaatgct 600
40  ggcgagtcga actcgggtgt gggcaatgcg ggtgatgtca aactggcct agggaaactcg 660
   ggcaacatcg atactggtg gtttaatcc ggcagcgtca acacgggctt cttcagcgcg 720
   atgacccaag ctggttcgaa ttcgggcttc ttcaacggcg gtaccggtaa ctctggttct 780
   gggcacaacg acccggttgg cagtggcaac tcgggcattc agaactcggg cttcggcaac 840
   tcgggctatg tcaatacag caccacaagg atgttcggcg gtaactcagg ggtgctcaac 900
45  acgggctacg gcaactcagg tttctataac cggcgcgcca acaacaccgg gatctttgtg 960
   accggcggtg tagattcggg atttttcaat ttggggacgg gcaactcggg cctgctggtc 1020
   agcggcaatg ggctttcggg tttcttcaag aacttggtcg gatag 1065

```

<212> Type : DNA

<211> Length : 1065

50

SequenceName : SEQ ID 540

SequenceDescription :

Sequence

-----

<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

```

55  atgtcgttcg tgctggcgat gccggaggtg ttggggtcgg cggcaacgga tctggccgct 60
   ctgggctcgg tgctggcgcg ggcgatgcg gcccgggcg ctacgacgac gggcatcgct 120
   gcccgggccc aggatgaggt gtcggcgcg atcgcgcggt tgttttcgca ccacggcgcg 180
60  gcctatcagg tggcagtg gcagcgcgcg gcggttcacg ccaggttcgt ggaggcggtt 240
   agcgcggtg cgggggcta cgcagcgcg gagcgcgcg gcgcgcggt gctggccaac 300
   ccggcgcgga gcgtgcag caactgctg gcccgcgca atcgcaaa gctcgcgctc 360
   acggggcgcc cgttgatcgg caacggcgcc aacggggccc cgggcacggg ggccaatggt 420
   gcgcggggcg ggtggttgc cggtaatggt gggcgcgcg ggtccgccc cgctgggctc 480
65  ggcctgcccg gcggggcgcg cggggcgccc ggggtgttcg gcacggcgcg ggtggtggg 540
   gcccgcgga gttccacg agtgatggg gagcgcggg gtgcgggtg atcaggtggc 600
   tgggtgttgg gcaccggtg ggtcggcggg gtcggcggg tcggggcgcg cgccggtggg 660

```

	gcccggcgggg	ttgggtggggc	cggcgggctg	ttgggtgctg	gcgggcacgg	cggcgccggc	720
	gggctaggcg	ccgtcaccgg	tggggctcgg	ggaaactggc	gagccgggtg	gctgctggcc	780
	gggctgctgg	ccgggcccgg	cggggcccgg	gggaccggcg	gacgtggctt	tctcaacaac	840
	gggtggggtcg	gtgggggctgg	cggcaacgcc	gggctgctgt	tcgggtgcccg	cggcaccggg	900
5	ggatccggcg	gagccggcct	aggtgggtgac	gggtggggccg	gtggggcccg	cggcaacacc	960
	gggtgtgctgt	tcggcaacgc	cggatccggg	gggaccggcg	ggttcggcga	taccgacggg	1020
	ggagccggcg	gtgccggcgg	tgacgcggcg	tggttgggct	ccgggtgggg	cggcgggggc	1080
	ggcggggttcg	gcgaaaccgg	tgacgggggt	gtcggcgggg	ccggcgggcaa	ggcggggttg	1140
	ctgatccgta	acggcggggc	cggcgggccc	gggtgggcaag	gcgcgcgtgac	cggcggttacc	1200
10	ggcgggggccg	gcggcgacgg	gggtgctgatc	ggcaacggcg	gcaacgcggg	catcggcgga	1260
	accgggaccga	ccggcggtga	taccggcgcg	gggtgggatca	gtgggctgct	gctggggcgcc	1320
	gacggcttca	acaccccgcc	cagcgccctct	ccgctgcaca	ccctgaaaca	acaggcgctg	1380
	gccgcgatca	acgcgcgcac	ccagacactg	accgggcgac	cgctgatcgg	caacggcacc	1440
	cccgggggccg	tcggcagcgg	ggccaccggg	gccccgggtg	gggtggctgct	cggcgacggc	1500
15	ggggccggcg	gggtccggcg	ggcggggctcg	ggcgcgcccg	gcggggccgg	cggggctgcc	1560
	gggctgtggg	gtaccggcg	ggcggcgccg	gcccgaaggca	gctcggcggg	tggcgcgggg	1620
	gcccgtgggg	ccggcggggc	cggcggtcg	ctgctcggcg	acggcggggc	cggcggggatc	1680
	ggcggaagcca	gcacgcgtact	cggcggggag	ggcgggggag	gcggggctcg	tgggctgttg	1740
	ggcgccgggtg	gggcccggcg	ggccgggtgga	accggccttg	ttggtggcga	cggcgggggc	1800
20	gggtggggccg	gcggggaaccg	cggactgctg	gcccgggctga	tcgggtgcccg	cggaggtcac	1860
	ggcggggaccg	gcgggctcag	cactaatggc	gacggcgggg	ttggcggggc	cggcgggaat	1920
	gcccgggaatg	tcggcggggc	ggcgggcgcc	ggcggaagccg	gcgggtgacgg	cgaaaacctg	1980
	gacaccgggtg	gggacggcg	ggccggcggt	agcgacgggc	tgctgttcgg	cagcgggcg	2040
	gcccggcgcg	ccggcggtatt	tgggttccctc	gggtggggacg	gcggggcccg	tggcaacgcc	2100
25	gggctgctgt	tgtccagcgg	cggggcccgg	gggttcggcg	gggtcggcac	cggcggtggg	2160
	gtcgggtggg	ccggcgggcaa	tgccgggtcg	ctgggcttcg	gcggggcccg	tggcgctcgg	2220
	ggcagcgccg	ggctgatcgg	caccggcgcc	aacggcgcca	acggcggcac	cggcgccaac	2280
	gcccggcagcc	ccggaaccgg	cggcgccggc	gggttgctgc	tgggccaata	cgggctcaac	2340
	gggttgccgt	ag					2352
30	<212> Type : DNA						
	<211> Length : 2352						
	SequenceName : SEQ ID 541						
	SequenceDescription :						
35	Sequence						
	-----						
	<213> OrganismName : Mycobacterium tuberculosis H37Rv						
	<400> PreSequenceString :						
	gtgtcgttgg	tgatcgcgac	gccgcagctg	ctggcaactg	cggcttttga	tttagcgagt	60
40	attggttcgc	aggtgagcgc	ggctaatacg	gcccgcggcg	tgccgacgac	ggaagtgggtg	120
	gctgcggctg	ccgatgaagt	gtcggcgggc	attgcggggg	tggtcggggc	ccatgctcgg	180
	cagtatcagg	cgctcagcgt	acaggtggca	cgctttcacg	agcagtttgt	gcaggcggtg	240
	actgcggccg	cgggtcggta	tgccagcact	gaggccgctg	ttgagcggag	tctgctgggt	300
	gcggtgaatg	cgccacccga	ggcgcttttg	gggcgcccgt	tgatcggaaa	cggcgccgac	360
45	gggacggcac	ccgggcagcc	tggcgcgccc	ggcggggttg	tggttggcaa	cgggtggcaac	420
	ggcgcgggcg	gcgggttcgg	tcaaacggcg	ggcagcggag	gcgcggcccg	gttgatcgcc	480
	aacggcgcca	acggcggggc	cggtggtacc	ggcgcgcccg	gcgggtgccg	tgggaaagg	540
	gggtgggttg	ggggcaacgg	cggcaacggc	gggtgcggcg	gcaccagcgt	ggccgcaggc	600
	atcggggggtg	cgggcggtaa	cggcgggcaac	gcccgggctgt	tcggccatgg	cggcgccggg	660
50	ggtagccggc	gcgcggccct	cggcggggca	aacgggggtca	atcccacgcc	cggccccggc	720
	gccagcaccg	gggacagccc	ggcagatgtg	tcgggcatcg	gtgatcaaac	cggcgccgac	780
	ggcgcgacgg	gcggccatgg	cactgcggcg	acgcggacgg	gtggcaccgg	cggcgacggg	840
	gccaccggca	cggcaggtct	gggcaaggcc	accggcggtg	ccgggtggta	cggcggtacc	900
	gcccgtcgcc	gtgctggcgg	cggcaacggc	ggcgacggcg	gagtcgcgca	ggcgacacat	960
55	gcgagcgcc	ttggcggtga	tggtggcaac	gggtccgacg	gtgtagccgc	cggcagtggt	1020
	gggtgtagcg	gcggcgccgg	aggcgggcgt	ttcgtagaca	tcggccactg	cacctctacc	1080
	gggtgtagcg	gcgggtttcg	tggtaaagg	gctgccagtg	ccgcctccgg	cggcgacggg	1140
	ggcgcgggcg	gagctggcgg	caatgggtgg	gcccgggggt	tgctattcgg	tgatggcgcc	1200
	aacgggtggc	ccgggtggcg	gggtgggtatc	gggtggtagc	gcgccacggg	ggggcccggg	1260
60	ggaagcgggc	gcaacgctgg	catcgcgagg	tttgacagcc	cagaccccca	ggcagaaccc	1320
	gatgtggtcg	gcggcaagg	tggtgatggc	ggcaaggcg	gcagcgccct	tggcgctggc	1380
	ggcgccggcg	ggaccggcgg	cggcgggcgg	ccggcggggt	gttggtcgcc		1440
	aacggcgcca	acggcgggca	cggcgggggc	ggcggggag	gcggcgccgg	cgttgccggg	1500
	gggggttggc	gtaacggcgg	cgggtgggtg	accgcgacgt	ttcacgaaga	cccgttcgct	1560
65	gggtgtctgg	cggtcgggtg	cgtaggtggg	gatgggtggc	ccggcgccag	ctcgcttggt	1620
	gtcggcgggg	tggcgggagg	cgggtggcgtg	gggtggcaag	gtggcgccag	cggcatgttg	1680
	atcgggaacg	gcggcaacgg	tggcagcgcc	ggagtcgggtg	ggggcggtgg	agtcggcggg	1740

gctggcggtg acggcgggcaa cggcggtctcc ggtggcaacg ccagtacttt tggcgatgag 1800  
aactccatcg gcggggccggg cgggacgggc ggcaacgggg gcaacggcgc aaacggcggt 1860  
aacggtggcg ctggcggtat tgccggcggt gcgggtgggt ccggagggtt cctcagcggt 1920  
gccgcaggag tcagcgcgcg tgacggtatc ggtggcgcg gcggcgagg cggtgccggt 1980  
5 ggcgcggggg gtagcgcgcg tgaggcaggc gcgggggggc tcaccaacgg ccccggtctc 2040  
cctggcggtt cgggcaccga aggcattggcc ggcgcgccc gctag 2085  
<212> Type : DNA  
<211> Length : 2085  
SequenceName : SEQ ID 542  
10 SequenceDescription :  
  
Sequence  
-----  
<213> OrganismName : Mycobacterium tuberculosis H37Rv  
15 <400> PreSequenceString :  
atgtcgtttg tgattgcggc gccagagggt atcgcggcag cggcaacgga tttagccagt 60  
ctcagatcga gcatcgccgc ggccaacgcg gccgcggcgg ccaacaccac agcactgctg 120  
gccgcgggtg ccgatgaagt ctcgacggcg gtttcggcgc tggtcggcgc ccacggccag 180  
gcctatcagg cgctcagcgc ccaagcgcag gcgtttcatg ccaggttcgt gcaggcggtg 240  
20 acctccggtg gcggcgcgta cggcgccgccc gaggcgccgc ccacctcgcc gctgctcgcc 300  
ccgatcaacg agttcttctt ggcaataacc gggcgcccg tgatcggcaa cggcaccaac 360  
ggcgcccgcc gcaccggggc caatggcggg gacggcggtt ggttaatcgg caacggcgcg 420  
gccggaggat ccggcgcgcc cggcgctcaac ggcggggccg gcggcaacgg cggcgccggc 480  
gggctcatcg gcaacggcg cgccggcggg gccggcgggg gggccaggac ggggaccggc 540  
25 ggcgcggggc gcgcggcgcg ggcggcgccc atgtctgttc gggcgccggg ggtcggcggt 600  
ccggcgcggt tcgcagccgc tttcggcgcc accggcggg ccggcggggc cggcggaac 660  
ggcgggctgt tcgcgcagcg cggggtcggg ggcgcggcg gggcaaccga cgccggcacc 720  
ggcgggggcg gcggatccgg cggaaacggc gggctgttcg gcgcggcgcg caccgggtgg 780  
ccggcggtat tcggcatctt tggcgcgccc gccggcgggg atggcggttc tggcgggctg 840  
30 ttccggcgcg gcgcggcgac cggtagtgcc gggacgagca taatcaacgt cggcgggaaac 900  
ggtggggccg gcggcgacgc cggcatgctc agcctcggtg ccgcggcgcg cgccggcgcg 960  
agcgcgggat ccaaccggga cggtagcggc ggtgcgggtg ggtatcgagg cgacggcgcg 1020  
acgttgttgc gctccggcg cgccggcggc gtctcggggc tgggcttcga cgccggcggg 1080  
gcggggcggt ccggcggaac ggcgggtctg atccatcggg ccggcggtgc cggcgggccc 1140  
35 ggcggcggtt ccttcgcggg cgccggcgga accggtgggg ccggcgggcg gcccgggctc 1200  
gtcggcaacg ccggcaacgg cggcaacggc ggcgcagcgc cgaacggcgc cggcgccgccc 1260  
ggcgggcgcc gcggaagcgg cgtgctgacg ggcaatggcg gtaacgggtg tagtggcgcg 1320  
actggcgcac ccgcggcgac ggccggcgcc ctgacacccc tgcagcaaca aatcctcaac 1380  
40 gacggattca acgccccgc cagcacgcca cggcgacccc tgatcggcaa cggcgccaac 1500  
gcgatcaacg agcccaccca agccctcacc ggcggcggtt ggttgttcgg caacggcgcg 1560  
ggcactccgg ggaccggggc cgacggtggg gccggcgagg gcggatccgg cggggccggc 1620  
aacggcgccc gaggatattg cggcaccggc ggggtccggc gcatcggaac gacgggcca 1680  
ggaatcctgt caggatattg cggcaccggc ttgtgatcgc gctccggcgg caccggcgcg 1740  
45 ggcgggaccg gcgggaccgg cggagccgccc gccggcgggc gcggcggtga cgccggcttg 1800  
agcgggcggt ttggcctgga caccggcggg gccgcctctt cccaaaactt tatcggtgcc 1860  
ttcctcggtg ccgcagggac cggcgggcag gggctgttcg ccaacggcgg ggcggcggg 1920  
ggcggcaccg ttggcgcgaa tggcgggacc ggggggaaac gattgctctt cggcgccggc 1980  
ggcaccggcg gggcgggcac gctcggcgcc gacggcgggc ccggggggca cggcgggctg 2040  
50 ttccggcgcc gcggcactgg cggtagctgg gccagcagcg gcggcacctt cggcgggcaac 2100  
ggcggcagcg gcggcaacgc cggcctactc gccctcggcg cctccggcgg cgccggcgcg 2160  
agcgggcgga gcgccttaaa tgcggcggg accggcgggg tcggcgggaa cggcggcagt 2220  
ggcggtctgc tcttcggctt cggcggtgcc ggcggcaccc gtggctccag cggcatcgcg 2280  
agcagcgggc gcaccggcg tgacggcggt acggcgggg tggtcggcaa cggcgggcag 2340  
55 ggcggcgccc gcgggtttgg cgtgacacc ggtgggaatt cgagctcggg ccccaacgcc 2400  
gtgctgatcg gcaacggcg caacggcggc aacggcgga aagccggcgg cacaccggc 2460  
gccggcgga ccagcgggct gatcatcggc gagaacgggc tcaacggcct gtaa 2514  
  
<212> Type : DNA  
60 <211> Length : 2514  
SequenceName : SEQ ID 543  
SequenceDescription :  
  
Sequence  
-----  
65 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :

```

5   atgtcggttg  tgatcgcggt  gccggagact  atcgcgcgcg  cggcgacgga  tctagccgat      60
    ctcggtctga  cgatcggttg  ggccaacgag  gctgcggcgg  ccaacacgac  gagcctgctg     120
    gccgcgggtg  ccgatgagat  ctcggcggca  atcgctgcgt  tggtcgggcg  gcacggccgg     180
    gcctatcagg  cggcgagcgc  cgagggcgcg  gcgtttcatg  gtcgggtcgt  gcaggcgctg     240
10  accaccgggg  gggggcgcta  tgcggcgccg  gaggcccgcg  ccgtgacgcc  gctgctcaac     300
    tcgatcaacg  cgccgctcct  ggccgctacc  ggccgctccg  tgatcggtaa  cggggctaac     360
    ggtgctcccc  gcaccggggc  caacggaggg  gatgcggcgt  gggtgatcgg  caacgggtgg     420
    gccgcgggat  ccggtgcaaa  gggcgccaac  ggcggggctg  gtggccctgg  tggggccgcc     480
    gggctgtttg  gcaacggcgg  ggccggcggt  gccggcgga  ccgccaccgc  caacaacggg     540
15  atcgcgggg  ccggtggcgc  tggcggggtc  gccatgctgt  ttggggccgg  cggcgccggc     600
    ggcgcggcg  gggctgcgac  gtctcttctg  ggtggcatcg  gccgtaccgg  cggaaccggc     660
    ggcaacggcg  gtatgctcgc  cggcgccgcc  ggggcccggc  gtgcggcgcg  gttcagcttc     720
    agcactgccg  gtggggcttg  cggcgccggc  ggggcccgtg  ggctgttcac  caccggcggt     780
    gggcgcggg  ccggtgggca  gggtcacacg  ggcggggcg  gcggcgccgg  cggggccggc     840
20  ggggtgtttg  gtgcccggcg  catggggcgg  gcgggggat  tcggggatca  cggaacgctc     900
    ggcacggcg  gggcgcgcg  ggcgggtgg  ggcggcggt  tgttcggcg  cggcggggac     960
    ggcggggcag  gcgggtcagg  actgaccacc  ggcggcgctg  ccggtaacgg  tggtaacgcc    1020
    gggcgcgctt  ccgtgggtgc  cgccggcgca  ccggtggggc  tggcgccact  tggcgccact    1080
    gtcttcgggt  gtggtaaggg  cggcgccggc  ggagccggcg  gtaacggcgg  catgctcttc    1140
25  ggctcggcg  ggggtggcgg  caacggcgcg  ttcggcttcg  ccgcccggcg  gcagggtggg    1200
    gtcggcgcca  gcgcggcgat  gctcagcgcg  tccggcggt  ccggcggtgc  tggcggtctc    1260
    ggggcccccg  cggcgccggc  cgccggcgcg  gcgggtgggg  cgggtggggc  gcccggttg     1320
    atcggaacg  gcggcaacgg  cggcaacggc  ggcgagagtg  gcggcaccgg  tgggtgctggc    1380
    ggggcccgg  gaaatgccgt  gctgatcgcg  aacggcgcg  agggcgccat  cggcgcgctc    1440
30  gccggcaagt  ccggcttcgg  cggcttcggc  ggggtgctgc  tggggcgcca  cggatataac    1500
    gctcccgaga  gcacctcgcc  atggcacaa  ctgcagcagg  acattctcag  tttcatcaac    1560
    gaaccaccg  aggcattgac  cggacgccc  ctgacggta  acggcgacag  tgggacgccg    1620
    ggaaccggg  acgatggcgg  tgcggcgcg  tggttgttcg  gcaacggcgg  caacggcggg    1680
    gccggtgcg  ccggcaccac  cggcagcgcg  ggcggcgcg  gtggggcagg  cgggatccctg    1740
35  tttggcaccg  gtggcgccgg  cggggccggc  ggcgtcgga  cggcggtgc  cggcggggccc    1800
    ggtggcgcg  gcggatccgc  ctctcttgat  ggttcggcg  gtaccgggtg  tgcggcgggg    1860
    gccgcccaca  ccaccggcgg  cgtcggcgcg  gccggcgga  acgcccggct  gctcatcggc    1920
    gcggctgggg  tcggcggtg  tggcgggcg  gctttcaccg  caggcggtac  cactggcgcg    1980
    gccggcgga  ctggcgcgcg  tgcgggttg  ttcgccaacg  gggggcgcg  cggcgccggc    2040
40  gggaccggca  gcaccgcgg  gggcgccggc  ggggcccgg  gggccggcg  gctgtacgcc    2100
    cacgggggaa  ccggcggaac  aggtgggaac  ggcggctcca  cggggcgccg  agggacaggc    2160
    ggtgccggcg  ggcccgggtg  gctgtacgg  gccggcggt  ctggcggggc  cggcggtcat    2220
    gggggcatgg  ccggcggggg  tggcggtgta  ggcggcaatg  ctggctcgct  caccctcaat    2280
    gcgtcgggg  gtgcggcgcg  caggcgggc  tccagcctgt  caggcaaggc  cgggtgctggc    2340
45  ggcgcggcg  gcagcgcgcg  attgttttac  ggctccggcg  gggccggcg  caacgggggg    2400
    tacagcctca  atggcactgg  cgggtgatgg  ggcaccggcg  gggccggcca  aatcaccggc    2460
    tctcgacgc  gcttcggcg  cgcggcgcg  gccggcgcg  ccagcgatac  cggcgccggc    2520
    gggaaacgg  gcgcggcgcg  caaggccggg  ctgtacggca  acggcggtga  cggtgggcgcc    2580
    ggcggggatg  gcgccaccag  cggcaagggt  ggagccggcg  gcaacggcgt  ggtgatcggc    2640
50  aacggcgga  acggcggcaa  tgcgggaaa  gccgggggca  cggcggggtg  cggcgcgccc    2700
    ggtgggctgg  tactcgccg  ggatgggcag  caccgcttga  cgtag      2745

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2745

SequenceName : SEQ ID 544

SequenceDescription :

Sequence

-----

&lt;213&gt; OrganismName : Mycobacterium tuberculosis H37Rv

&lt;400&gt; PreSequenceString :

```

55  atgtcggttg  tgatcgtaac  cccggagacg  gtggccggcg  cggcctcgga  tgtggcgcg      60
    atcggtcat  cgatcggtgt  agccaacagc  gccgcggcgg  ggtcaaccac  cagcgtgctg     120
    gccgcggcg  ccgatgaggt  gtcggcgcg  atcgcgacgc  tgtttgagcag  ccattgctcg     180
    gagtatcagg  cgatcagcac  gcaggtggca  gcgtttcatg  accgatttgc  gcagacgtta     240
60  agcgcccgcg  tcggctcgta  tgtcagcgcg  gaggcgacca  acgcccacc  gttggcgacg     300
    ctggagcaca  acgtgctcaa  tgccctcaat  gcgccacc  aggcgttgct  gggctcgccc     360
    ttgatcgggt  atggggcgcg  tggagcacc  gccaccggcg  aggcggcgcg  ggcggcggg     420
    atcttggtgg  gcaacgggtg  ggcggcgcg  tccggcgcg  ccggccaagt  cggcggggg     480
    ggcggggcg  ccgggtgtgt  cggcacggcg  ggggcccgtg  gggccgggtg  ggcggcgcc     540
65  gccggtgggg  ccgggggtag  cggcggtg  ctgctgggca  atggtggagt  cggcggggg     600
    ggcgggcaga  gcctgctggg  cggggcaacc  gccggggcg  gcggcaacgc  cggactgttc     660
    ggggtcgcg  gaaccggcg  gcccgcggg  cccggcggg  ccggcggggt  cggcggtacc     720

```



```

5  ggtggtgccg gtggcctggg cgggaccctc tacggggccg gcggggcacgg aggtgcccggc 780
   gggcccggcc cgatcggttg tgtgggtgga caccggcggtg tcggggggtgc ggcggggctg 840
   ttgggcgtgg gcggggcacgg tgggtgccggc ggacacggcg cggaggggtgt ggcggggcgca 900
   gccgggtgagg acttgtcccc gcacgggtacg tccggtgggg tcggcgggcga cgcggcgcat 960
10 ggcgggcaccg gagggcgggg cggctggctg gccggcgccg gtggggccgg cggggccggg 1020
   ggggttggtg ggaccggcgg ggccggcggg gccggatttt ctgctgcctt gattgtcgct 1080
   ggggataacg gcggtgatgg tggtaacggc gggatggggc gggctggcgg ggttggcggc 1140
   cccggcgggg ccggcgccct gatcagcctg ctgggcggcc aaggcgccgg cggggccggc 1200
   gggaccggcg gcgctggttg cgtcggcggg gaccgcggag ccggcgggcc cggcaaccag 1260
15 gccttcaacg caggtgcccg cggggccggc ggccatggcg gtgaccccg cgcggcggg 1320
   gccggaggca ccggcgggag cggctccatc accggcgctc agggcgccat cggcgccacc 1380
   cccaccagcg gcggcaacgg cggggccggc ggcaacggcg ccaacgccac caccggcggc 1440
   accaacggcg ccaacggcgg acccgggcg catggcgggc tggtcggcaa cggcgggcgcc 1500
   ggcggcaacg gcgccaacgg cgcgcaggg acgaaacgga gcgattcggg cgcagtcggt 1560
20 ggcaaaaggca atagcgggcg caacggcggc caggcgggcg ccggcgggcga cggcggaact 1620
   ctgcggcgga atggcgggcg cgggtgggact gggcgccgg cgcgagacgg cgggctcggt 1680
   ggtagtgggt ccgaggggtg caatgccacc acccgggcg agcgtggcca ggacgggtgt 1740
   aaaggcgga acggtggggt cggcgggacc ggcgcaacg ccgtcgacc cgggtgccaac 1800
   ggcggccatg gcggcaacgg cggcaatcct ggcttcagcg gcgctggcgg gctcgggggg 1860
25 ctacggcggt cgcgcgtgac ccgcgcggcg cagggtgcga ccccgactt tgcagacac 1920
   gggggcaaa gcggcaacgg cggtaacggc gccaacggcg ttgcacccgg cggcaccggc 1980
   gccagtggtg gagccggcgg gaacgctggg gctggcgga agggcgggga aaacatcatc 2040
   ggcgtagggc gcggcggaac cggcgggggc ggcgcaagg gcggcgccgg caccctgcta 2100
   ggtctcacgg tatgtggcga caatggcgcg ccggcgctcc tcggcgactc gacggaccca 2160
30 gatggcagcg gcggtgctgg tggcgcgggc ggcgccgggt gcgcccgttg cgatccaacc 2220
   atctga 2226

```

<212> Type : DNA

<211> Length : 2226

SequenceName : SEQ ID 545

30 SequenceDescription :

Sequence

-----

```

35 <213> OrganismName : Mycobacterium tuberculosis H37Rv
   <400> PreSequenceString :
   atgtcgtttg tcacggcagc tccagagatg ctggcgacgg cggcgagaa tgtcgcgaat 60
   atcggcacat cgctgagtg ggcaaacggc acggcagcgg cgtccacgac ctcggtgctg 120
   gcggccggag ccgacgaggt atcgagggt atcgcaaggc tgttcagtga ttacgccacg 180
   cactatcagt cgctgaacgc tcaagccggc gcatttcac acagcttcgt gcaaacggtg 240
40 aacggccggc gtggcgccga ttcgagcgcc gaggcggcca acgcttcggc gcaggcggtg 300
   gaacagaatc tgttgccgt gatcaatg cgcccccagg cgttgctcgg gcgtccctg 360
   atcggaatg gcgcgaatgg aacagcgggc agcccacaac gcggtgatgg tgggattttg 420
   tacggcaacg gcggcaacgg cttctcccaa acgacggcg ggggtggccg cggcgccgg 480
   ggttcggcg gcctgatcg caacggcggc aatgggtggc cgggtggggc cgtgctgccc 540
45 ggcggggccg gcggcgccgg cggatggctg ctggcgaac gtggcgccgg cgggtccggc 600
   ggcccaacgg acgttctctg cggcacaggt ggagccggcg gggccggcg cgcgcccc 660
   ttgatcggt gggcgggcaa cggcgggccc ggcggtttcg ctgcttttg aaacggtggg 720
   gccggcgcca acggcgggc cagcggttcg ctctttggcg tcggcgggcg cggcgcgctc 780
   ggcgggatcg gcgaagacgt cggcggcacc ggcgggggcg gcggcgctgg ccgcggtcta 840
50 ttctctggcc tggcggtgga tggcgggccc ggcggcacca gcaacaacaa cggcggtgac 900
   ggtggcgccg gcggcaccgc gggaggtcga ttgttcagcc tggcggtgga cgggtggcaac 960
   ggtggtgccc gtaccgcaat cggatccaac gccggtgacg gtggcgccgg cgggtgacagc 1020
   agcgccctga tcggtacgc ccaggggggc tccggcgggc tcggcggtt cggcgaaagt 1080
   accggcgggc acggcgccct gggcgggccc ggcgctgtgc tcatcggcac gggcgctggc 1140
55 ggtttcgggc gcctcggttg cggctccaac ggacccgggg gcgcgggcg cgcggggcg 1200
   acggcgccca cgctgatcg cctggggccc ggcgcgggcg gcggcatcg cgggttcgcc 1260
   gtcaacgtgg gcaacggcgt cggcggtctg ggcgggcagg gcggccagg cgcgcgctg 1320
   atcggcctgg gcgcggcg tgcggcggt gccggcggg ccacagtcgt tggacttgg 1380
   ggcaatggcg gtgacggcg tgaacgggt ggcctgttta gtatcgcgct cgggtggggac 1440
60 ggcggcaacg cgcgcaacgg gccatgcct gccaatggcg gccaatggcg caacggcg 1500
   gtcattgcca acggctcctt tgccccgtcg ttgctcggt tcggcgggca cggcggaac 1560
   ggcgtcaatg gcggcaccgg cggcagcggc gggatccttt ttggcgccaa cggcgcgaa 1620
   ggaccgtcgt ag 1632

```

<212> Type : DNA

65 <211> Length : 1632

SequenceName : SEQ ID 546

SequenceDescription :

## Sequence

```

-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
5 <400> PreSequenceString :
atgtcgtatg tattggcgac gccggagatg gtggcgagcgg cagcaaacaa tttggcgag 60
atcggctcga cgttgagcgc ggccaatgcc gcggcgctgg ccccgaccac cggagtgtctg 120
gccgcgggcg ccgacgaggt gtcggcagcg gtggcgctcgc tgttttccgg gcacgcccag 180
gcctatcaga cactcggcac gcaggcgggc gcgtttcatg aacggtttat ccaggccttg 240
10 agcacggctg cgggcgcata tggtagcgcc gaggccgcaa atgcctcccc gctgcagcaa 300
gcgttgaatg tgatcaacgc gccacgcag acgtgctcg gccgccccct gatcggcaac 360
ggcaccaatg gtgcgcggg tacgggcag gccggcgggc cgggtggctt gttgtatggc 420
aacggcgcca atggcggggc cggcgggggtc ggccaagccg gcggagcggc cggcagcgcc 480
gggttgatcg gcatcgcgcg gaccgggggg gccggagggg ccggcgcggt cggcgcgctc 540
15 ggcggcaacg gggggtgggt atacggcaat ggcggggcgg gcgggctcgg ggggaccggg 600
gtggcgggcg tcaatggcgg tatgggcgca gcaggaggtg ccggcgggcaa cgctacctg 660
ttcggttctg gcggcgcggg cgggcagggg ggtatggggg cagccggggc agacggcgctc 720
aaccacacac ccacggcgac cgctgatgcc ggcagtaacc gcaccgacca gacgtcgggc 780
ggcaacgcca taggcggtaa cgttggtccc gccgatgccg gcgacggat gacgtccggc 840
20 ggcgctggcg ggtctggcgg gaacgcctgc tcaacgctca acggcgacgc cgtggcggt 900
gagggaaggc aagggggtga gggcgctat ggcggcgctg gcggcgccgg cggcagcgcc 960
gcttccatcg gcaatgcagc cataggaggt aacggcggtg ccggcgggaa cggccaggcc 1020
ccggcggtg tggggggcgc cggcgggcaa ggcgggggat cccagggtgg caccaattct 1080
cccagcaacg cggaaaggcg taacggcggc agcgcgcgca acggcttoga cagcttcgct 1140
25 tccggcggtg ccggcgagc gggcggaacc gggggcgccg gtggccggcg cgggctgctg 1200
atcggcgacg gcggcgccgg cggcgcgggc ggagtcggtg gtaccggtgg tagcgtgccc 1260
ccggcgcgcg gcggcgcgcg cggggcgac ggcggtgccg ccaacaccga cagcgccggc 1320
agttcacgca agcgttcgg gggcgatggc ggtgtgggcg gtgacggcg gcgagccctc 1380
ggcacgggtg gcgaaggcgg tatcgcgggc caggcggtga acgggggtgc tggcgggctg 1440
30 ctcatcgcca acggcgcgcg cgttggtgtc ggcggcaccg ccggtgccgg tggtagctgt 1500
ggttcgggtg gtgctggagg tgccggaggc gccggtggtg gcggcaccaa cagtggctcg 1560
ggcgacgctg ttggcggtaa cggcaacacc gcggcaacgg gcggcgcccc cggcgcccc 1620
ggcgccctcg gcggcaaggc cgggtccggc gggctgattg gccgcgcggg cagcgacggt 1680
ggcggttggt ccggaggagc gggcgggcgg ggtggcgccg gcggcacagg cggtaggggc 1740
35 ggcacggcg gcgacgggaa aaccaccgac ggcaatcccg gcatggcgcg cagcccgggc 1800
agcgccggcc aaccggcta a
<212> Type : DNA
<211> Length : 1821
SequenceName : SEQ ID 547
40 SequenceDescription :

```

## Sequence

```

-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
45 <400> PreSequenceString :
atgtcgtttt tgtttgcaca gccggaatg ctgggcgcgcg cggcgacgga tctggcgaagc 60
atcggctcgg cgtacgacac ggccaatgct gcggcgcgcg ccgccacgac gcgtgtgctg 120
gccgcgggtg ccgataggt gtccgcgcgc gtggcgcgcg tgttttagcg ccacgcgcag 180
acctatcagg cgctgagaac tcaggcgggc gcgtttacc agcagatcgt gcagaccctc 240
50 acgagcacgg caggcgcgta tgccagcgcc gaggccgcca acgtcgagca gcagctgctg 300
ggtgcgatca acgcgccgac catggcgctg ctggggcgcc cgctgatcgg ccacggcgcc 360
gacggggcgc cggggaccgg gcaggcgggc gggggcgcg ggatcctgta cggcaacggc 420
ggcaacggcg ggtccggcgc caccggtcag gccggcggtg cggggcgggc ggccgggctg 480
atcgccacg gcggggcgcg cggcctgggt ggcaccggcg cgtccggtgg tgccggcggg 540
55 gccggcggtg ggtgtggtgg caacggcggg gccggcgcca atggcggggt cgggggtggc 600
ggcgaccccg gtggtgtcgg cgtgcccggc ggtgccggcg gcgcgcggc attgtggggc 660
agcggagggt ccggcggcac cggcgggcaa gggggggctg gtggcgggca gtccggcgac 720
ggcggcacgg ggggtatcgg cggcgccggt ggcggtggtg gctggctgca cggcgacggc 780
ggcgcgcgcg gacacggcg gcaggcgga accggcgta gctcaggagg caacggcggg 840
60 gccggcgcca ccggcgcgga cggccggcg ctgtcgggca gcggcggggc cggcgggcg 900
ggcgggcaaa cgggggttgg aggcaaatg acttcggggg cggcgggcgt 960
gccggcggtg ccggcgggct catcggaac ggcggtgccg gcggcaacgg cgggcaaggc 1020
gcaattagcg gcgcggcg ggccggtggc aatgcctggc tgatcggcga cggcggtg 1080
ggcggaacg gcggtgatat ccgtggccag ggcggcgcg ccggtggagc cggcgcgct 1140
65 gbtgggcaac tcattggcaa cggcggcacc gggggggcag gggggaccgt caccagtc 1200
aacggctctg gcggtgctgg cggagcggc ggggtccggc gtctgattgg ccacggcg 1260
accggcgggg ccggcgggca cagcgccag gggcccgac gcaatggcg aattgggtgt 1320

```

gcccggcgggg cccggtggcaa cggcgggacaa ctctacggca cccggcggcac cggcggcacc 1380  
ggcgggcaagg gcccgcagcg cttcggcgtg ttcggcaagg gcccgcgccg cgggaccggc 1440  
gggcgaggcg gtgcccgcgg cctgatcggc gacgcggga cccgcgggac cggcggaaag 1500  
ggcggcaccg cccgcgaggga cggtagccgg ggcaacggcg ggaecggcgg aaacgggtggg 1560  
5 gcccgcgtcc taatcggcaa cggcggggggc ggcggcgcgg gcggaaacgg tggggccggc 1620  
aacgatggca cccccggcaa cggcggggggc ggcggcgtcg gcgggaccgg gggaaccctg 1680  
ttcggccagc cgggccaacc cggtagccgg ggcagcccg gccccgccta a 1731

<212> Type : DNA  
10 <211> Length : 1731  
SequenceName : SEQ ID 548  
SequenceDescription :

Sequence  
-----  
15 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :  
gtgtggacgt cgcagatgat cgtggcgccg gcgtttgtcg atgcagcggc aaaggacctta 60  
gcaactattg gttcggcgat tagccggggc aacgcggaag cgttgggtccc gataacggcg 120  
20 ttactgcctg cggcgctga cgacgtgtcg gctgcgattg cggcgctgtt cgcaacgcac 180  
gggcaggcat accaggagct cagtggccac gcggtcgcat tccatgagca gttcgtccag 240  
ctcatgagcg cggggggggc ccagtagccc agcggcgagg cagccaactc gtcaccattg 300  
caaatcgtgg gccaaaccgc cctcgatgcc atcaattcac cgtgacagac gctgaccggg 360  
cgtccgctta tcggcaacgg tgccaacggg gtcgcaggaa cggggcaaaa cggtggcgat 420  
25 ggccgatggc tatacggcaa cggtgggcaa ggcgggtccg gcgggacggg ccaaaatggc 480  
ggcaacggcg ggtcgggtcg gctatggggg agcggcgcca atggcgcca gggcggggcg 540  
ggtgccaaag gcgcagccgg tcaacccggg aaagcggcgg ggtccggcgg caacggcgcg 600  
gccgggtgat ggatctatgg tcacgggtgga catggtgggg cggcgggaaa cgggggcaac 660  
gccacagcgc cggggggtgc gtcggcaggc ttcgatgggg gcgccggcg aaacgggggt 720  
30 tcgggtggtc gcggtggact gttgttcggc aacggcgcca acggctcggg cgggtggcatg 780  
ggaggacaag gcactaatga cacagccgga gattcggcgg gcagcggcg attaggaggc 840  
aacgggggca acggcgccca gggcggtgg ctgatcggca acggggggca aggtggggac 900  
agcggcgccg gcggcgccac cgactccact caaacggcg tcatgaacgg cgcttccggc 960  
ggttcggccg ggatagccgg taacggcggt gacgcgggccc tagtcggcaa cggcggggcc 1020  
35 ggtggcaacg gcgggaatgg agcggccggg tctgcgctgg gtactaccat cttcggcggg 1080  
agcggcgggg cggcggtgctc agcggcgagc ggcggcaacg gcgggtggtt gttcggcagc 1140  
ggcgcgccg gcggcaacgg gggtcagggc ggtgacgag gcaccaacgg atttcggggc 1200  
tttggcggtc ctgctggcgg tggcggtcgg gtaggtgccg ttaacttcgg accgattagt 1260  
gtccagggtt ttgggttgtt tggtcacggc ggtgacggcg gcaacgggtg tgacgttggg 1320  
40 gccggcagcc ttcgcatcca atttgggtgca tcagggggtg acggcgcca aggtgggggtg 1380  
ctatacggca atggcggcaa cggtggtaac gccggcagcg gcggaggtac cggcttcgaa 1440  
ggcagcgccg gccagggtgg ccgcgccatt ctgatcggca acggcggggc cggagggaat 1500  
ggggcgaccg gtgggaccgg agtaggcaac attattcagg aagccggagg tgacggcagc 1560  
gacgggtggc cggcgggcag cggaggcccta ctgttcggta gcggcggggc cggcgccatc 1620  
45 ggccggggccg gcggcgctcg cgggtcgggc aacgacggcg gcaacggcg cgatggtggc 1680  
caaggcgggg caagcgccct ggggatcggc aacggcgag cccgggggaa tggcggtacc 1740  
ggtggggccg gcggaaccgg cggcagtgcg ggcattggcg gtgccggcg tgacggtgg 1800  
aacgccggcc tgcgtgatcg taccggtggc gacggcgag atggtgtccc accgcaccc 1860  
gggggccaag gcggcaaggg cggattgatc ggtttgcctg ggcagaacgg gcagccgtag 1920

50 <212> Type : DNA  
<211> Length : 1920  
SequenceName : SEQ ID 549  
SequenceDescription :

Sequence  
-----  
55 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :  
60 atgtcatggg tgatggttcc gccggagctg gtggtggcgg cggcagcgga tttggcgggg 60  
atcgggtcgg cgattagctc ggctaatacg gcggcgccg tcaacacgac gggattgttg 120  
acgcgggtg ccgatgaggt gtcgacagcg attgcggcgt gtgtcgggtc ccaaggccag 180  
gctaccagg cggcgagcgc acaggcgggc gcgttttacg cccagttcgt gcaggccctg 240  
agcgcggcg gaggcggtg tgccgcccgc gaggccggcg cgtgtcgcc gctgtggcc 300  
65 ccgatcaacg cgcaattcgt ggcggccacc gggcgcccgc tgatcggcaa cggcgccaac 360  
ggcgcccccg ggaccggagc caacggcggg cccggcggtt ggttgatcgg caacggcgcg 420  
gcggcggggt ctggcgcccc cggcgctggg gccggcggtg acggcggggc cggcgggctg 480

ttcggcagcg gcggggccgg cggggccctcc accgacgtcg ccggcggggc cgggtggggcc 540  
ggcggggccg gcggaaacgc cggcatgctg ttcggcgccg ccgggggtcgg cggcgctcggc 600  
ggattctcga accggcggtgc caccggcggg gcaggcgggg ccggcggggg gggcgggctg 660  
tttgccgccc gaagggaacg cggcagcggc gggtcgggca acctcactgg cggggccggc 720  
5 ggggcggggc gcaacgccgg gacactcgcc actgggtgat gcggggccgg cgggaccggc 780  
ggcgctagtc gcagcggcgg attcggcggg gccggcgagg ccggcgggca cggcggcatg 840  
ttcttcggct ccggcgggct cggcgggccc ggcgggcata gtaaaagcgt cggggacagc 900  
gccgcggggc gggcggggcg gggccccggg ctgatcggca acggcgggca cggcggcaac 960  
ggcgggcgca gcaccggcg cggggacggg gggcccggcg gggcgggcgg caaccggcgtg 1020  
10 ttgatcggca acggcgggca cggcgggcag gggcgggacc gcgcgaccct gggaagggc 1080  
ggcatcggcg gtaccggggg ggtgctggtg ggcttgagg gctttacggc ccggccagc 1140  
acctcgcccc tgcacacctt gcagcaggac gtgatcaata tggtagaaga ccccttccag 1200  
acgctcaccg ggcgtccgct gatcggaac ggccccaacg gactccggg gaccggggct 1260  
gacggcgagg ccggcggtcg gttgttcggc aacggcgga acggcgggca ggggaacgat 1320  
15 ggcggcggtc ggcggcgggc cggcgggggc gcggggatct gtccggcacc 1380  
ggcgggcacc ggggcagcgg cggggccggc gccaccggcc tcggcgggat tggcggggccc 1440  
ggcgggagcc ccttgcctct cggctccggc gggcgggcg gaagcggtgg tggcgggcgg 1500  
gtcggtgga atggcggggg cggcgggcaac gccgggtgag tcttggggcg cggcggggccc 1560  
ggcgggcgcc gtggtgcccg cggcggtcgg gtcaatggcg gggcgggcg taacggcggg 1620  
20 ctggttcgca acggggggag cggcgggccc ggtgggtttg gcagccccgc tggggctggc 1680  
gggatcggcg gggcaggtgg gaacggcggg ctggttcggc ccggcgggac cggcgggggc 1740  
ggcgggggaa gcacctctgc cggcgggccc ggcgggcg gcggcaacgg cgggctgttc 1800  
ggcgcgggcg gcaacggcg cggcgggcag ccggcgagg ttcggaggg 1860  
gcccgggggg ccggcgggca cggcggttg ctctccctcg gcgcctccgg cggggccggc 1920  
25 ggcagcggcg gttccagcct gaccgcggcc gccgtggtcg gcggcatcgg cggcgccgga 1980  
ggcttgcctc tcggctccgg cggcgccggc gggagcggcg ggttcagca ctcggcaac 2040  
ggcgcgggcg gcaacggcg cggcgacgg cgggttcgct tcggctccgg cggggccggc 2100  
ggggccggcg cctccggcac cggcgccggc accggcgggg acggcgggg cggcgggcaag 2160  
tcggagcgt tcgggttcgg aggtgacgg gccggcggg gcggcaccgg tctgtccgg 2220  
30 gctttccaca tcggcgggca gggcgggcgt gccggcagcg ccgtgctgat cggcaacggc 2280  
ggcaacggcg gcaacggcg taacagcgg aacggcgga aatccggggg tgcaccggc 2340  
cccagcggcg ccggcgggcg cggcgggctg ctgctcggtg agaacgggct gaacggctg 2400  
atgtag 2406  
<212> Type : DNA  
35 <211> Length : 2406  
SequenceName : SEQ ID 550  
SequenceDescription :  
  
Sequence  
40 -----  
<213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :  
ggccagagct atcaagcgg cagcgcccag gcggcgggct ttcattgacc gttcgtccaa 60  
ctgcttaacg ccggtggagg ttcatatgag agcgccgaga ttgccaacgc gcagcagaac 120  
45 ctgctgaacg cgggtgaacg gccaccacag acgctgctgg ggcgtccgct ggtcggcgac 180  
ggcgccgacg gggccagtg tccgggtgga cagcccgggc gggacggcg catcttctgg 240  
ggcaacggcg gcaacgggtg cgacagcag agccccggg ttgcccgggg agccggcggg 300  
tcagcgggggc tgatcggcaa cggcgggcag ggcggcaac gtgcgcccgg cgggtgcagg 360  
ggcaatggcg gcctggggcg attgctgctg ggcaacgggg gtgcgggggg agtcggcggt 420  
50 accggtgaca acggtgtggg agacctcggt gctggcgggc ggggaggcga tggcggtttg 480  
ggtggacggg cggggctgat cggtcacggc ggtgcccggc gaaacgggtg ggacgggtgg 540  
caccggcgga ggggcaagg cggcgggcag ggcggcagtg gcggcttcgg ccagttcgg 600  
ggcgccggcg ggcgtgctga cggcaatgga gggcgggcgg gttccggcg caacgggtgg 660  
gatgcaggta ccggcgtctc cagcgacggg ttgcggggg tggcgggcag cgggtggcgg 720  
55 ggcggcgacg cggggctgat tgggtgctgc gcggcgggcg cgggcaacgg cggcgaccca 780  
gggctcggtg cggcctggt ccaggtaggt agtcggcgcg gcgacgggtg ggtcggcggg 840  
tggctgtacg gcgatggcg cggcgggcgg gacggcggtg atggggggct gccatttatt 900  
ggctccacca acccgggcaa cggcgggcag gcgcggctca tcggcaacgg tgggtgcccgg 960  
ggtagcgggc ggaagcggcg gcctggctcg gctcagcagc gggcgctcgg ggcgcgggc 1020  
60 aaccggcgcg gcagcggtag caacggcggg gtgtggtac gcaacgggtg cggcgggggg 1080  
ggcgccggcc aagggggggg cggcatgaac accacctcgc ccggcgggcc gggcggtgtc 1140  
ggcgggcagc gggcgaccgc catcttgttc ggcgacggtg gcggcggtgg ggctggcgcc 1200  
gcccggcgag ccggtactcc ggacggggcg gcggcgcccg cggcgagcgg cggcaccggc 1260  
gggctgctgt tcggagtcgc cggcccgctc ggcccggagc ggtaa 1305  
65 <212> Type : DNA  
<211> Length : 1305  
SequenceName : SEQ ID 551

## SequenceDescription :

## Sequence

-----

5 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :  
atggctcatt ttctcgtgtt gccgccggag atcaactcgt tgcggatgta cctgggtgcc 60  
ggttcggcgc cgtatgcttca ggcggcgccg gcctgggacg ggctggccgc ggagttggga 120  
accgccgcgt cgtcgttctc ctccgtgacc acgggggttaa cggggcaggc gtggcagggc 180  
10 ccggcgctcg cggcgtatgg ccgccggcg gcgcgctatg cgggcttttt gaccacagcc 240  
tcggctcaag ccagctggc tgcggggcag gctaaggcgg tggccagcgt gttcagggcc 300  
gccaaggccg cgtatcgtgcc tccggccgcg gtggcgggca accgtgaggc gttcttggcg 360  
ttgattcggc cgaattggct ggggctcaac gcgcgctgga tcgccgcctg tgaaagcctt 420  
tacgaggaat actgggcgcg tgatgtggcg gcgatgaccg gctatcacgc cggggcctcg 480  
15 caggccgcgc cgcagttgcc gttgccggcc ggctgcaac agttcctcaa caccctgccc 540  
aatctgggca tcggcaacca gggcaacgcg aacctcgccg gcggcaacac cggcagcgcc 600  
aacatcggca acggaacaaa aggcagctcc aacctcgccg gcggcaacat cggcaataac 660  
aacatcggca gcggcaaccg aggcagcgac aacttcggcg ccggcaacgt cggcaccgga 720  
aacatcggct tcggcaacca gggcccccata gacgttaacc tcttggcgac gccggggccag 780  
20 aacaactggg cctggggcaa catcgggcaac aacaacatgg gcttcggcaa caccggcgac 840  
gccaacaccg gcggcgggcaa caccggcaac ggcaacatcg gtggcgggcaa caccggcaac 900  
aacaacttcg gcttcggcaa caccggcaac aacaacatcg gaatcgggct caccggcaac 960  
aatcagatgg gcatcaacct ggcggggtcg ctgaactccg gcagcgggcaa tatcgggcatc 1020  
ggcaactccg gcaccaacaa catcggtctg ttcaactccg gcagcgggcaa catcgggctc 1080  
25 ttcaacaccg gagccaatac cctggtgcct ggcgacctca acaacctggg cgtcgggaat 1140  
tcgggcaacg ccaacatcgg ctccgggaac gcggcggttc tcaacaccgg ctccgggaac 1200  
gcgagcatcc tcaacaccgg ctgggggaac gcgggtgaat taaacaccgg ctccggaaac 1260  
gcgggcttcg tcaacaccgg gtttgacaac tcgggcaacg tcaacaccgg caatgggaac 1320  
tcgggcaaca tcaacaccgg ctcggtgaat gcgggcaatg tgaacaccgg tttcgggatc 1380  
30 attaccgaca gcggcctgac caactcgggc ttcggaaca ccggcaccga cgtctcgggc 1440  
ttcttcaaca ccccaccgg ccccttagcc gtcgacgtct ccgggttctt caacacggcc 1500  
agcgggggca ctgtcatcaa cggccagacc tcgggcattg gcaacatcgg cgtcccgggc 1560  
accctctttg gctccgtccg gaggcgcttg aacacgggcc tgtttaacat gggcaccgcc 1620  
atatacgggt tgttcaacct gcgccagctg ttggggtag 1659

35 <212> Type : DNA  
<211> Length : 1659  
SequenceName : SEQ ID 552  
SequenceDescription :

40 Sequence  
-----

<213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :  
atgtcgttcc tgattgcttc gccggaggcg ctacggcgca cagccacata tttgacaggt 60  
45 atcgggttcg caatcagcgc ggcgaacgcg gtcgcgcccg ccccgacaac agagatcctg 120  
gcggcgggga ccgacgaggt gtccaccgcc atctcagcgc tgttcggcgc tcatgccagc 180  
gcatacagg cgctcagcgc ccacgtggcg gcatttcacg accagttcgt gcatacctg 240  
accgcccgtg ccggctcata catggccgcc gaggccggcg ccgcctcgcc tctgcaggct 300  
ttgcagctgg agctgctcaa cgccatcaat gcacccaccc tggcgctggt gggacgccc 360  
50 ttgatcggcg acggcaccga tgcggcgccg gggagcgggg gggccggcgg ggcggcgccg 420  
atcttgatcg gcaacggcgg gacggcgccg gccagcgact tagccggggc cggccggcggc 480  
ggggtcggcg gggcgggcgg cgccggcgcg ctcttcggca tcggcgcgcg cggcgggggc 540  
tgcgggtccg cgggtggcgt cgggggtgac ggcggggctg gtggcgccgg cggcggtgtc 600  
agcggcgggc gcgcggcgcg ggcggcgga ggcacgggg gtacggcgcg cgcgggcgcg 660  
55 accggtgggc tgttgggtgg tggcgggcgg gcggcgggcg ccggcgggcg cggcgggcaat 720  
ggcgggggcg ccagcaacag cgcaagtatc gggggtgacg gtgggtccgg cggcgcgggc 780  
ggcatgctct acggtgcccg cggcgctcggc ggcaacggcg gggccggcgt cgctatcggg 840  
ggtgacggcg gggcgggcgg caggcgccga gcgatcggca acggcggtga cggcgggcaac 900  
ggcgggactt ccaacacccc cggcggttagc ggcggcgacg gcggcaatgg cgggaacgcc 960  
60 ggaactgacg gcaacggcgg taacggcgcg aacggcgaga ttgtcatctc cggcggttagc 1020  
gtcgccggca ccggtggcaa cggcggggtg ctggtgggct tcaacggcac gaacgggctg 1080  
ccgtag 1086

<212> Type : DNA  
<211> Length : 1086

65 SequenceName : SEQ ID 553  
SequenceDescription :

## Sequence

<213> OrganismName : Rickettsia prowazekii strain Madrid E  
 <400> PreSequenceString :

5	atgaaaaaat	caaaaatttt	aagaaaattt	ttagcaacag	cctcactatg	tgggacatta	60
	ttcactaact	ctaagtcaac	aggaacaatt	attcctaata	atggtagcgt	aagcttgaat	120
	actgacgcag	gtctttagg	aggagtattt	aacaatggcg	atattatcca	aatagttaat	180
	ggagggcggtg	aaattaaaaat	atcggcagat	aaagcaaatg	ctatcattgg	aggaatcaat	240
	acattaaaaag	aactgcctga	ttttgggtggt	gttgaagtaa	gtcaaaacgt	ctcaataggc	300
10	cctcttaattg	caggagaaga	tcttaatact	aattttggcc	ctcttaaat	tattagtaat	360
	aatgtttacgt	caattattac	aggagtcggt	actaaaacat	ttagtaatat	cgattttgct	420
	ggtaaaaaatg	ctaattttaca	aattaataaa	gattttaaata	ttacaactaa	aatagataat	480
	acagtagccg	gaaataatgg	ttcaataaca	tttgaaggta	gcgggtattat	atcaaatcac	540
	ataggctaca	ctaactctct	tttaggaata	aatgtaggaa	acggagaagc	caagattttat	600
15	gcccagaag	caataaatat	tacaataata	gctaaaaata	taaactctac	tcacaataac	660
	tctatactta	ctctttgtga	cggtaacata	actacattaa	agggtaatat	aaataatact	720
	acagaaattg	acggtcaagg	tatattaaat	ctagcttatg	atcttggtag	tagtagcata	780
	ataacagggtg	atataggtaa	tataggctca	ttagatataa	taaagtgttt	acttggatct	840
	gcaacattta	attctacaat	attaaaagcg	actaatatta	atttaaaaca	taataacttc	900
20	acactcaatt	tagatgataa	cataattggt	attggttaata	taaaaggtaa	taataacaaa	960
	gatatatttaa	attttaaaagt	gcattggtact	aatttagata	acgaaatgat	tattcctgct	1020
	cctcaaaaaa	ctcatggtac	attaaaattt	aaaggaaatg	ctacacttaa	tgggaatata	1080
	aataactttta	ataacttta	gtttagtga	ggtcacggta	aaactttgaa	tttacaagg	1140
	aataactaaag	tagataatct	tggtttgtgca	gtatgtgttt	tagattcagg	tactataagt	1200
25	gttaacgggt	tgtagatagc	agactgtgtg	acatttaaca	atagtaattgt	taacggcgga	1260
	acattaataa	taaatgccaa	gaacacaaatc	agtgcaaaat	tattaaatgc	tacaaaagca	1320
	aaaatacaaaa	tcaatgctaa	tttaacgatg	aatcatccaa	gtgctgggga	tataagtgat	1380
	attagaatag	cggataatac	aatctataca	atagatgcaa	aaaatgggaa	tgtaaatattg	1440
	ctaaataaca	acgcaagat	catatttgaa	ggagctgatt	ctatgttagc	tttaaatcaat	1500
30	actggtgtta	cagctgatag	aacctttacc	atatataata	atttaaa tca	atctggcaat	1560
	gatgaattatg	gaatagttaa	aatagaagca	attaaaaaag	taataactat	agcaaatcaa	1620
	agtggaacctt	tactatagg	gcaggataat	acacatcgtc	ttaagggaatt	aatagtagag	1680
	ggagcaggtg	atatcataat	agatgatacg	atattttacga	agttacttag	tataaacagt	1740
	acaggacaaa	taacatttaa	tcgtacttta	gattttagggt	cagggtggtaa	tattgcattt	1800
35	ggaaagcag	gtacattagt	agtaaacgggt	gtcactgggt	caattacaac	ttctgaaaat	1860
	aatcaaggaa	tattaaacaat	caatagcggg	aatattactg	gtgttat tgg	cactaatgaa	1920
	ctcggcttaa	aacttgtcaa	tattggtgca	gatcctgtta	cgtgctcagc	aaatgtattt	1980
	gcacggttag	cttttaactaa	cccaagttct	gtgttaattt	tagcaga tgg	tgttacgcta	2040
	actgtgtgaag	taataacaca	taataataca	aaaggtgtat	tatcact tgg	aacagggaat	2100
40	aatataacag	gtcaaatcgg	tactaatagc	gcagctcttg	agaaaat aaa	tattggggct	2160
	ggagctagta	atattgacag	taatatatat	gcaggttcta	cagtact cac	agatcaaaaa	2220
	tcggaattaa	cttttaacaa	tgatgtagtc	gttaacagta	atatcat aac	tactgccggg	2280
	aacaatcagc	gaaagttaat	atttacaggt	aatggcggca	taacaggaaa	cataggagca	2340
	aatggtgca	ctttcaaga	ggttgatttt	aacggtacta	ctaataatagg	tggtacagcg	2400
45	aactcacaga	actttactgt	tgacattctt	gcagcaaatg	tggtgat tac	aggacttact	2460
	actggtgcat	taaaatacaa	agatactggt	acaattatag	ctcatggagg	attggttagga	2520
	gacatcgatt	ttaataataa	agctggtaaa	ttcatttttag	gcgatgggtgc	tatgattgat	2580
	ggatcagtg	tatgtaattg	aggggttgct	gtacattggg	attttatagg	tgacggtaat	2640
	gtaactcaaa	atataggcgc	agataatgca	aatagttatt	cgactat caa	cattcaaggc	2700
50	gataatacaa	aaaacgtaac	tatagcaaat	gatataattg	tagataa tat	tcattttaca	2760
	aacgggtggga	tattacagct	tggcggaat	ctcacaacgc	ataatat tga	tttcggagca	2820
	aatggtggta	ctttagaatt	taatggtaat	aatacatata	acttaaa tgc	tattattgta	2880
	aacggacaaa	acggtatatt	aaatgctttc	acaaacttaa	aggctagcga	tgatactatt	2940
	ggtacggtta	aaataattaa	tataggacaa	ataggaaacac	cgcaaaa ctt	tactattcaa	3000
55	gttaataaca	aaaatttaac	tctagtaagt	agcgtaaaata	gtagcat taa	ttttgggtgat	3060
	gctaattcgc	aattaatatt	atctgcacca	gtagatcaaa	ctattaaatt	tattaataat	3120
	ttaaacgaaa	ctggagggtg	tattatcact	ttagatagta	atggttaa taa	tttaaccata	3180
	agtggttaata	atggaataaa	gcttggtagt	aaaggtaatg	agttatctag	cttaaatatt	3240
	aaaggaaaaag	ttactgtaac	taatgattta	gatatacaaa	atattcatca	attaaatata	3300
60	aacaatgggtg	cattatttga	tgaccaaaagt	ctcacactctg	ctaaaat caa	aaatataaat	3360
	attggtacag	tagcaggcgg	agctacttat	acttttagatg	ctataaa tga	taattttgat	3420
	ttaaatacta	gtggtatggt	atttaaacat	caagattcaa	tattagaact	gaaaaatagt	3480
	tcaaaatacta	atgaccacac	tataacatta	acatctgctt	tagatccagg	taataatcaa	3540
	tttggtataa	ttaaaactcat	aacagatact	ataaaaattaa	ctataga caa	taatggcaat	3600
65	gtggccttata	cactcggtag	agcaaatcat	atggttgaagc	aattaac ttt	tgctagtata	3660
	gataatgggg	ctatagcttt	aaaagtaggg	atcaatgttg	aaaatgt tac	cttaaatatt	3720
	aaggatatag	agttaaatga	ggtgaatgca	aatgttctgt	ttacaaaaa	cacaacatat	3780

	accgcaacag	gtaatatataa	cggtcagtga	gattttccaag	gtaatgcagg	tgtaataaat	3840
	cttaatgatg	atatagaaat	tgacggtagt	gttacaagta	cgggtaalyt	aaacgggtaca	3900
	ttaaatttca	atggatcagg	taaagtgact	ggtttaaatca	ataacatagt	aatgctgcaa	3960
	gcaggagcag	gtgatgtatc	actatctgct	agcggtaatt	attctattac	tgaaattcaa	4020
5	ggtaacggta	ataataaattt	gacatttgct	gctaattcac	acttaacaac	tgatattaat	4080
	aagacaggcg	gtcaggatttt	aaatttagta	ttcataaatg	gtggtagcgt	tagcggttct	4140
	atcggcgcaa	atgcagcagt	tggtgatatt	attataaacg	caggaagtgt	aaatttcagt	4200
	aatactctta	aaagcggtaa	tattgttata	tcggatgggt	ccacgatgca	agttaataat	4260
	aacgtaactg	ctactgatat	ctcaggcaaa	aatgcaaata	acggaaacttt	aaaactaaat	4320
10	aatcatacac	ctattaatat	cactagtaca	cttggttaata	ataatgctat	agggaccata	4380
	gaagtgcgaa	ataatgatgt	taccattaca	gggacattac	aagcgcaaaa	tattcatttt	4440
	tcaaattgcca	ctcaggcagc	taccttaact	ttagggcgag	catcgcaagt	gactaatatt	4500
	actacggcag	gaaataaatt	tcatacttta	gaagtaacag	attttgatac	tggtaatgac	4560
	ggcataatag	gagatgcaaa	taatagatta	aaaatcaatag	aattggcagg	caatggcaca	4620
15	ytgactatta	attctccaca	tgttttattca	tctattacta	ctgcaaataa	cgcgcaaggt	4680
	aacgtaaaac	tcaatataga	aggcgggtatt	acttatgatt	taggaagtaa	aataaaaagt	4740
	ttagcaaatg	tcaaaattag	tgaggatact	actattagag	gtgatgtgta	ttctaaatat	4800
	cttaatatag	acgcaggtaa	aactataaat	tttgatagag	gtgataataa	catgaatccc	4860
	aaaaatttag	atataccaga	tgctctaata	gatttagatg	tattaccacg	ctogctctca	4920
20	ctatttaatt	acttcactga	tattaaagcg	gataatttaa	attttgcala	tgatactgtc	4980
	acagcaaat	ttaaagatgc	tgttgtaata	gatgcacata	ttgataatgg	tggtcatttta	5040
	aaatttaatg	acaatgcttg	gttaacacaa	aaatttaaaa	atgctaacat	catagaaatt	5100
	gcatctgata	aatttatggt	gcttcagaaa	aacattaaag	cagctacttt	aatagctgat	5160
	aatgcaaat	tagtattatt	agataatgtg	gaagtaataa	ctaacttaaa	tgtagagat	5220
25	attgtattag	atttagctaa	ttatgaatta	aaatatactg	gtaatgttac	acataatgga	5280
	ttactgacta	ttatcacctta	ttttgatact	gcattacaaa	aaggtgggca	tattattagt	5340
	agtcaaggat	ctaattgtcg	tatgtccgat	ttagataatt	taataattaa	aattaaagca	5400
	cactccgata	tcactaacat	tacctcagat	actaaacacc	aaatagtaaa	actcgaaaca	5460
	gggtcaatat	atactccagt	accgcaaaact	aaagtcatga	ttgatgcaag	cgaggaacaa	5520
30	aataaatttg	tgaatgggt	cgctgatgca	aacgggttgg	tattacttac	tgatactgga	5580
	gggtcgagacg	atactggagg	tcgagacgat	actaggggtc	gaggcaatac	tgacaatggc	5640
	tgctgtgata	attgtgatgt	aggggaatgc	agcaataaca	gtagtaatga	agcaggtggg	5700
	tcaagttagcg	ataaaaattta	tggtcatcact	gatgttgtac	caatttttga	tccatctcct	5760
	atcttagatt	atactaaaaa	taattatgta	gcttctggta	tagcaaacca	acttattaat	5820
35	catgttaaag	attttggttaa	tactactgat	gcaggtaaat	tattaaatga	tttaggtttt	5880
	atgtctccga	atagagttac	tgaaacatta	gatagactta	gtaatagaat	aaatgttaat	5940
	ggacttaagt	aaggagtagt	aggactgaac	ggatcgagg	ttgagaattt	tttaacagat	6000
	atagcaataa	atatggataa	tttcaactgct	aaagagattg	gcaatagggt	agaagaatta	6060
	agcgatgcaa	atactgtaaa	tggtctcaac	aaaaacaaaca	cattgcttaa	taataagatt	6120
40	aatctaaaaa	gactgaatac	taataatcag	gcaataattg	ctgcagggtga	tgaagataat	6180
	atagtaacgg	gcatttgggg	catgtcattt	tatggtaaaa	taaagcaaaa	ctctaaaaac	6240
	agtgaacgag	gttatcaatc	taatacaggt	gggtgggtata	taggctttga	ttataatatt	6300
	gataattcta	tagttatagg	ggcgggttat	actatggctg	atagtaaagt	caagcacaaa	6360
	aatgataaaa	atgggtgatag	aaccaaagct	aaaagtaata	tatattctat	ctatgggctt	6420
45	tataattggc	ttactataaa	cttttttgtt	gaagctatag	gtgtgtatgg	tagaaataaa	6480
	atcaaaaaatt	atgaaaaacg	tataactact	attactgatc	aaatcgcaat	aggtaaaatt	6540
	attaatactt	tttatagcta	tgaattacta	gggtggtata	actatctaata	atcgcatcgt	6600
	accactataa	cgccaatggt	tggtatgcgt	tatgctacat	ttaaaaataa	tggttacaaa	6660
	gaaaaataata	ctactttcca	aaatttatct	ataaagaaaa	attactatga	taaatttgaa	6720
50	actataattag	gttttaaatg	tgtaactcat	tatttatcac	aagatataat	aataaagccc	6780
	gaattacatt	ggttttataa	ttatcaatgt	aaaaataagt	taccaaatat	tgatgcacgc	6840
	cttgacggta	tagatgaacc	attgacaaca	attagattta	aacctgcaaa	gataacatat	6900
	aatttaggcg	gtgggtatttc	tactaaaaat	aatatgatag	aatttggtat	tagatataac	6960
	ttatctcttg	cgaagaaata	tacagcacat	caaggatcct	taaagattaa	agtgaacctg	7020
55	taa						7023

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 7023

SequenceName : SEQ ID 554

SequenceDescription :

60

Sequence

-----

&lt;213&gt; OrganismName : Rickettsia prowazekii strain Madrid E

&lt;400&gt; PreSequenceString :

65

atggctcaaa	aaccaaattt	tctaaaaaaa	ataatttccg	caggattgggt	aactgcttcc	60
acggctacta	tagtagctgg	tttctctggg	gtagcaatgg	gtgctgctat	gcaatataat	120
aggacaacaa	atgcagcagc	tacaaccttt	gatgggtatag	gctttgatca	agctgctggg	180

	gctaataatc	ctgtcgtctc	aaattcagtt	attactgcta	atgctaataa	tcctattact	240
	tttaataact	caaacgggtc	tttaaatagt	ttatttttgg	atactgcaaa	tgatttagca	300
	gtaacaatta	atgaggatac	taccttagga	tttataacaa	atattgctca	gcaggctaag	360
	ttctttaatt	ttactgttgc	tgctggtaaa	attcttaaca	taacagggca	gggtattact	420
5	gttcaagaag	cttctaatac	aataaatgct	caaaatgctc	ttacaaaagt	gcatgggtgc	480
	gctgctatta	acgctaatac	tcttagcggg	ctaggatcaa	taacctttgc	tgctgcgcct	540
	tctgtattag	aatttaattt	aataaatcct	acaactcaag	aagctcctct	tacacttggg	600
	gctaattcta	aaatagttaa	tggtggtaat	gggacattaa	atattactaa	tggtattatt	660
	cagggttcag	ataacacttt	tgctgggtatt	aagaccatta	atatcgatga	ttgtcaagg	720
10	ttaatgttta	attctactcc	tgatgccgct	gaacttttaa	atttacaagt	aggtggtaat	780
	actattaatt	ttaatggaat	agacgggtact	ggtaaatagg	tattagtcag	taagaatggg	840
	gctgctaccc	aatttaattg	tacagggaact	ttaggtggta	atctaaaagg	tattattgaa	900
	ttgaacactg	cagcagtagc	tggtaaactt	atctctcaag	gaggtgctgc	taatgcagta	960
	ataggtacag	ataatggagc	aggttagagct	agcagattta	ttgttagtgt	tgataatggg	1020
15	aatgcagcaa	caattttctgg	acaagtttat	gctaaaaaca	tggtgataca	aagtgcataa	1080
	gcagggtggac	aagtcacttt	tgaacacata	gttgatgttg	gttttagggc	taccaccaac	1140
	tttaaaactg	cagattctaa	agttataata	acagaaaact	caaactttgg	ttctactaat	1200
	tttggtaact	ttgacacaca	gatttagatc	cctgactacta	agattcttaa	aggttaacttc	1260
	ataggtgatg	taaaaaataa	cggttaatac	gcagggtgtga	ttacttttaa	tgctaattgg	1320
20	gctttagtaa	gtgctagtac	tgatccaaat	attgcagtaa	caaataattaa	tgcaattgaa	1380
	gcagaagggg	ccgggggtgt	agaattatca	ggaatacata	ttgcagaatt	acgtttaggg	1440
	aatgggtggc	ctatctttaa	acttgctgat	ggcagagtaa	ttaatgggtc	agtttaaccaa	1500
	aatgctctta	tgaataataa	tgctcttgca	gctgggttcta	ttcagttaga	tggtgagtgct	1560
	ataattaccg	gtgatataag	taacgggtgg	gttaatgctg	cgttacaaac	cattacttta	1620
25	gctaacgatg	cttcaaaaat	attagcactc	gatggcgcaa	atattatcgg	ggctaattgtt	1680
	gggtgtggca	ttcatcttca	agctaaagg	gttactatta	aatttaacaa	tactcaaaat	1740
	aatattgtag	ttatttttga	tttagatata	actactgata	aaacagggtg	tggtgatgca	1800
	agtagtttaa	caaataatca	aactttaact	attaatggta	gtatcggtag	tggtgtagct	1860
	aataactaaa	cacttgcaca	attaacatc	gggtcaagta	aaacaataat	aaatgctggc	1920
30	gatgtcgctc	tttaacgatg	agttatagaa	aataatgggt	cagtacaaat	taatcacaa	1980
	acttacttaa	taacaaaaac	tatcaatgct	gcaaaccaag	gtcaataaat	cgttgccgct	2040
	gatcctctta	atactaatac	tactcttgct	gatggtacaa	atttaggtag	tgcaaaaaat	2100
	ccactttcta	ctattcattt	tgccactaaa	gctgctaatt	ctgactctat	attaaatgta	2160
	ggtaagggag	ttatgttata	tgctaataat	gttactacta	acgatgctaa	tgtaggttct	2220
35	ttacacttta	gggtctgggtg	tacaagtata	gtaagtggta	cagttgggtg	acagcaagg	2280
	cataagctta	ataatttaat	attagataat	gggtactactg	tttaagtttt	aggtgatata	2340
	acattttaat	gtgggtactaa	aattgaagg	aaatccatct	tgcaaatagg	caataattat	2400
	actactgatc	actgttaact	tgctgataat	actggtacat	tagaatttgt	taacactgat	2460
	cctataaccg	taacattaaa	taaacagggt	gcttattttg	gtgtttttaa	acaagtaatt	2520
40	atttctgggtc	caggtaacat	agtatttaat	gagataggta	atgtagggaat	tgtagatggg	2580
	atagcagcta	attcaatttc	ttttgaaaa	gcaagtttag	gtacatcttt	attcttacct	2640
	agtgactactc	tttaacaaat	aaaagtagc	taggttaagg	taacagttag	taacagttag	2700
	aatttttaatg	ctcctattgt	agttgtatca	gggtattgata	gtatgatcaa	taacgggtcaa	2760
	atcatcggtg	ataaaaaagaa	tatttatagc	ctatcgcttg	gaagtataaa	cagtattact	2820
45	gttaaatgcta	atacattata	ttcagggtatc	agaactacaa	aaaataatca	aggtactgtg	2880
	acacttagtg	gtgggtatgc	taataatcct	gactcattta	atgggttagg	tttagagaga	2940
	ggtagtccaa	agttaaaaaca	agtgacattt	actacagatt	ataacaactt	aggtagtatt	3000
	attgcaaaata	atgtaacaa	taatgattat	gtaactctta	ctacaggagg	tatagcaggg	3060
	acagattttg	acgctaaaat	tactcttgga	agtggttaac	gtaacgctaa	cgtaagggtt	3120
50	gttgatagta	cattttctga	tcctagaagt	atgattgttg	ctactcaagc	taataagggt	3180
	actgtaactt	atttaggtaa	tgcattaggt	agtaatatcg	gtagttaga	tactcctgta	3240
	gcttctgtta	gattttacagg	taatgatagt	ggggcaggat	tacaaggcaa	tatttattca	3300
	caaaaatatag	attttgggtac	ttataattta	actattctaa	attctaattg	catttttaggt	3360
	gggtggtacta	ctgctattaa	tggtgaaatc	gatcttctga	caaataattt	aatatttgca	3420
55	aatgggtactt	caacatgggg	tgataataact	tctatttagta	caacgttaaa	tgtagtaagc	3480
	ggtaatatag	gtcaagtagt	cattgccgaa	gatgctcaag	ttacgcgaac	aactacagg	3540
	actacaacca	ttaaaaatca	agataatgct	aatgcaaat	tcagtggaac	acaagcttat	3600
	acttttaattc	aaggtgggtc	tagattttaat	ggtagcttag	gagctcctaa	ctttgctgta	3660
	acaggaagta	atattttcgt	aaaatatgaa	ctaatacgtg	attctaacca	ggattatgta	3720
60	ttaacacgta	ctaacgatgt	attaaacgta	gttacaacag	ctggttgaaa	tagtgcaatt	3780
	gcaaatgcac	ctgggtgtaag	tcagaacatt	tctagatgct	tagaatcaac	aaatacagca	3840
	gcttataata	atatgctttt	agctaaagat	ccttctgatg	tgcaaacatt	tgtaggagct	3900
	attgctacag	atacaagtgc	ggctgtaact	acagtaaaact	taaatgatag	acaaaaaact	3960
	caagatctac	ttagtaatat	gctaggtaca	cttagatatc	taagtaatgc	tgaaacttct	4020
65	gatgttgctg	gatctgcaac	aggtgcagtg	tcttcagggtg	atgaagcgga	agtatcttat	4080
	gggtgatggg	ctaaaccttt	ctataacatt	gcagaacagg	acaaaaaagg	tggtatagct	4140
	gggtataaag	caaaaaactac	tggtgggtgta	gttgggttag	atactctcgc	tagcgataac	4200



ctaatgattg gggcagctat tgggatcact aaaactgata taaaacacca agattataag 4260  
 aaaggtgata aaactgatat taatgggtta tcattctctc tatatgggtc ccaacagctt 4320  
 gttaagaatt tctttgctca aggtaatgca atctttacct taaacaaagt caaaagtaaa 4380  
 agtcagcggtt acttcttcga gtctaattgg aagatgagca agcaaattgc tgctggtaat 4440  
 5 taccgataaca tgacatttgg tggtaattta atatttgggt atgattataa tgcaatgcc 4500  
 aatgtatttag taactccaat ggcaggactt agctacttaa aatcttctaa tgaaaattat 4560  
 aaagaaccgg gtacaacagt tgcaataaag cgcattaata gcaaatntag tgatagagtc 4620  
 gatttaatat taggggctaa agtagctggg agtactgtga atataactga tatttgtgata 4680  
 tatccggaaa ttcatctctt tgtgggtgcac aaagtaaagt gtaaatatc taactctcag 4740  
 10 tctatgttag atggacaaac tgctccattt atcagctcaac ctgatagaac tgctaaaacg 4800  
 tcttataata taggcttaag tgcaaacata aaatctgatg ctaagatgga gtatgggtatc 4860  
 gggttatgatt ttaattctgc aagtaaatat actgcacatc aaggtacttt aaaagtacgt 4920  
 gtaaaacttct aa 4932  
 <212> Type : DNA  
 15 <211> Length : 4932  
 SequenceName : SEQ ID 555  
 SequenceDescription :  
 Sequence  
 20 -----  
 <213> OrganismName : Porphyromonas gingivalis W83  
 <400> PreSequenceString :  
 atggcacgaa ttatcttggg ggctcacgat gtatgggaag acggcacagg ctatcaaattg 60  
 ctctgggatg cagatcacaa tcagtacggc gcatccattc ccgaagaatc tttttgggtt 120  
 25 gccaacggaa cgatcccgcc cggctctttac gatcctttcg agtataaagt tccgggtcaat 180  
 gccgtatgcat ctttttctcc caccgaatttc gtgcttgatg gaacagcatic agccgatatt 240  
 cctgccggca cttatgacta tgtaatcatt aaccccaatc ctggcataat atatatagta 300  
 ggagagggtg tctccaaagg taacgattat gtggttagagg ccggttaagac ttatcatttc 360  
 actgtccaac gacaaggccc cggcgatgct gcgtccgttg tagtgaccgg agaagggtggc 420  
 30 aatgaattcg ctcccgta caatctccaa tggctctgat ccgggcagac agtgaccctc 480  
 acttggaag ccccgcatc cgacaaacgg acttatgtgt tgaacgaaag cttcgatacg 540  
 caaacgcttc ctaacggctg gacaatgatc gatgctgatg gtgatgggtca caattggcta 600  
 tctacaataa acgctttaca cactgctact catcacggtg acgggtgctat gtttagcaaa 660  
 tcatggacag ctaggcagtg tgcaaaaatt gatttgagt ctagacaacta ttgggtaact 720  
 35 cctaagttta cgggttcctga gaatggtaaa ctttcttatt ggggttctac tcaagagcct 780  
 tggactaatg agcattatgg agtgttcttg tccacaaccg gaaacgaggc tgcaaacctt 840  
 acgataaagc tgctggaaga aacctccgga tccggcaaac ctgctccgat gaacttgggtg 900  
 aagatgtgaag tgctggaaga tccggcacct tatcaggaaa gaacctcga tctctctgcc 960  
 tatgccggac aacagggtga cttggcattc cgtcatttcg gctgtacagg tatattccgt 1020  
 40 ctttatcttg atgacgtggc tgtttctggg gaaggttctt ccaacgacta cactgacacg 1080  
 gtatatcgtg acaatgttgt tatcgcccag aatctcacgg caacgacatt caatcaggaa 1140  
 aatgtgagtc ccggcagta caactactgt gttgaagta agtacacagc cggcgatatt 1200  
 ccgaagggtat gtaaaagcgt tacggtagaa ggatccaatg aatttgctcc tgtacagaac 1260  
 ctgaccggta gtgcagtcgg ccagaaagta acgctcaagt gggatgcacc taatgggtacc 1320  
 45 ccgaatccga atccgggaac aacaacactt tccgaatcat tcgaaaatgg tatttctgcc 1380  
 tcatgggaaga cgatcgatgc agacgggtgac gccacaactt ggacgacgac cctctctccc 1440  
 ggagggtcct cttttgcagg tcacaacagt gcaatctgtg tctcttcggc ttcttatatc 1500  
 aactttgaag gccctcagaa ccctgataac tatctgggtta caccggagct ttctcttccc 1560  
 aacggaggaa cgcttacttt ctgggtatgt gcacaagatg ccaattatgc atcagagcac 1620  
 50 tatgcccgtgt atgcattctc tacgggtaac gacgcttcca acttcgcca cgttttgggt 1680  
 gaagaagtgc tgacggccaa gacagttgtt acggcacccg aagccattcg tggcactcgt 1740  
 gtccagggca cctgggtatc aaagacggta cagttgcctg cgggtactaa gtatgttgcc 1800  
 ttccgtcact tccggtgtac ggacttcttc tggatcaacc tcgatgatgt tgagatcaag 1860  
 gccaacggca agcgcgcaga cttcacggaa acgcttcgagt cttctactca tggagaggca 1920  
 55 ccagcgggaat ggactactat cgatgccgat ggcgatggtc aggggttggc ctgtctgtct 1980  
 tccggacaat tgggatggct gacagctcat ggccggacca acgtagtagc ctctttctca 2040  
 tgggaatggaa tggctttgaa tccgtgataac tatctcatct caaaggatgt tacaggcgca 2100  
 acgaaggtaa agtactacta tgcagtcaac gacgggtttc ccggggatca ctatgcggtg 2160  
 atgatctcca agacgggcac gaacgcggga gacttcacgg tctgttttca agaaacgcct 2220  
 60 aacggaataa ataaggcgcg agcaagattc ggtctttcca cggaaagccaa tggcgccaaa 2280  
 cctcaaatgt tatggatcga gcgtacggta gatgtgctg cgggcacgaa gtatgttgct 2340  
 ttccgtcact acaattgtct ggatttgaac tacattcttt tggatgatct cagttcaccc 2400  
 atgggtggca gccccacccc gaccgattat acctacacgg tgtatcgtga tggtagaag 2460  
 atcaaggaa gtttgaccga aacgaccttc gaagaagacg gcgtagctac gggcaatcat 2520  
 65 gagtattgcg tggaaagtga gtacacagcc ggcgtatctc cgaaagagtg tgaacacgta 2580  
 actgttgatc ctgtgcagtt taatcctgta cagaacctga ccggtagtgc agtaggtcag 2640  
 aaagtaacgc ttaagtggga tgcacctaat ggtacccga atccgaatcc cggaacaact 2700

5 acactttccg aatcattcga aaatgggtatt cctgcctcat ggaagacgat cgatgcagac 2760  
 ggtgacggca acaattggac gacgaccct cctcccggag gcacctctt tgcagggtcac 2820  
 aacagtgcga tctgtgtctc ttccggcttct tatatcaact ttgaaggccc tcagaaccct 2880  
 gataactatc tgggttacacc ggagctatct ctctctaacc gaggaacgct tactttcttg 2940  
 gtatgtgcac aagatgccaa ttatgcatca gagcactatg ccgtgtatgc atcttctacg 3000  
 ggtaacgacg cttccaactt cgccaacgct ttgttggaag aagtgtgac ggccaagaca 3060  
 gttgttacgg cacctgaagc cattcgtggc actcgtgttc agggcacctg gtatcaaaag 3120  
 acggtacagt tgcttgcggg tactaagtat gttgccttcc gtcacttcgg ctgtacggac 3180  
 10 ttcttctgga tcaacctcga tgatgttgag atcaaggcca acggcaagcg cgcagacttc 3240  
 acggaacagt ttctttccgg tactcatgga gaggcaccag cggaatggac tactatcgat 3300  
 gccgatggcg atgggtcagg ttggctctcg ctgtcttccg gacaattgga ctggctgaca 3360  
 gctcatggcg gcaccaacgt agtagcctct ttctcatgga atggaatggc tttgaatcct 3420  
 gataactatc tcatctcaaa ggatgttaca ggcgcaacga aggtaaagta ctactatgca 3480  
 15 gtgaactaga ttctttccgg ggatcactat gcggtgatga tctccaagac gggcacgaac 3540  
 gccggagact tcacgggtgt ttctgaagaa agcctaaccg gaataaataa gggcggagca 3600  
 agattcgggtc ttccacacga agccaatggc gccaaacctc aaagtgtatg gatcgagcgt 3660  
 acggtagatt tgccctgcggg caccgaagtat gttgctttcc gtcactacaa ttgctcggat 3720  
 ttgaactata tctttttgga tgatattcag ttcaccatgg gtggcagccc caccocgacc 3780  
 gattatacct acacgggtgta tcgtgatggg acgaagatca aggaagggtt gaccgaaacg 3840  
 20 accttcgaag aagacggcgt agctacgggc aatcatgagt attgcgtgga agtgaagtac 3900  
 acagccggcg tatctccgaa agagtgcgtg aacgtaactg ttgatcctgt gcagttcaat 3960  
 cctgtacaga acctgaccgg tagtgacgtc gccacgaag taacgctcaa gtgggatgca 4020  
 cctaattgga ccccgaaatc gaatccggga acaacaacac tttccgaatc attcgaaat 4080  
 25 ggtattcctg cctcatgga gacgatcgat gcagacggtg acggcaacaa ttggacgacg 4140  
 acccctcctc ccggaggcac ctcttttgca ggtcacaca gtgcgatctg tgtctcttcg 4200  
 gctcttata tcaactttga aggcctcag aaccctgata actatctggt tacaccggag 4260  
 ctttctcttc ctaacggagg aacgcttact ttctgggtat gtgcacaaga tgccaattat 4320  
 gcatcagagc actatgccgt gtatgcatct tctacgggta acgacgcttc caacttcgcc 4380  
 aacgctttgt tggaagaagt gctgacggcc aagacagttg ttacggcacc ggaagccatt 4440  
 30 cgtgttactc gtgttcaggg cactgggtat caaagacggg tacagttgac tgcgggtact 4500  
 aagtatgttg ccttccgtca cttcgggtgt acggacttct tctggatcaa cctcgatgat 4560  
 gttgagatca aggcacaacgg caagcgcgca gacttcacgg aaacgttcga gtcttctact 4620  
 catggagagg caccagcggg atggactact atcgatgccg atggcgatgg tcagggttgg 4680  
 35 ctctgtctgt cctccggaca attgggatgg ctgcagctc atggcggcac caacgtagta 4740  
 gctctttct catggaatgg aatggctttg aatcctgata actatctcat ctcaaaggat 4800  
 gttacaggcg caacgaagggt aaagtactac tatgcagtc acgacgggtt tcccggggat 4860  
 cactatgcgg tgatgatctc caagacgggc acgaacgccg gagacttcac ggtcgttttc 4920  
 40 gaagaaacgc aacctaaggc aaataagggc ggagcgaagat tcggtctttc caccgaagcc 4980  
 aatggcgcca aacctcaaag tgtatggatc gagcgtacgg tagatttgcc tgcgggcacg 5040  
 aagtatgttg ctttccgtca ctacaattgc tcggatttga actacattct tttggatgat 5100  
 attcagttca ccatgggtgg cagccccacc ccgaccgatt atacctacac ggtgtatcgt 5160  
 gatgggtacg atgagtaagg aggtttgacc gaaacgacct tcgaagaaga cggcgtagct 5220  
 acgggcaatc atgagtattg cgtggaagtg aagtacacag ccggcgtatc tccgaaagag 5280  
 45 tgcgtaaacg taactattaa tccgacacag ttcaatcctg tacagaacct gacggcagaa 5340  
 caagctccta acagcatgga tgcaatcctt aaatggaatg caccggcatc taagcgtgcg 5400  
 gaagtcttga cgaagactt cgaaaaatgg attcctgcct catggaagac gatcgatgca 5460  
 gacggtgacg gcaacaattg gacgacgacc cctcctcccg gaggtcctc ttttgcagg 5520  
 cacaacagtg cgatctgtgt ctcttcggct tottatatca actttgaagg tcttcagaac 5580  
 50 cctgataact atctggttac accggagctt totcttctg gcggaggaac gcttactttc 5640  
 tgggtatgtg cacaagatgc caattatgca tcagagcact atgccgtgta tgcattctct 5700  
 acgggtaacg acgcttccaa cttcgccaac gctttgttgg aagaagtgtc gacggccaag 5760  
 acagttgtta cggcaccgga agccattcgt ggtactcgtg ttcagggcac ctggtatcaa 5820  
 aagacggtag agttgcctgc gggtagtaag tatgttcct tccgtcactt cggctgtacg 5880  
 55 gacttcttct ggatcaacct tgatgatgtt gtaatcactt cagggaacgc tccgtcttac 5940  
 acctatacga tctatcgtaa taatacacag atagcatcag gcgtaacgga gactacttac 6000  
 cgagatcccg acttggctac cggtttttac acgtacggtg ttaagggtgt ttacccgaac 6060  
 ggagaatcag ctatcgaaac tgctacgttg aatatcactt cgttggcaga cgtaacggct 6120  
 cagaagcctt acacgctgac agttgttaga aagacgatca cggtaacttg ccaaggcgaa 6180  
 60 gctatgatct acgacatgaa cggtcgtcgt ctggcagcgg gtcgcaacac ggttgtttac 6240  
 acggctcagg gcggccacta tgcagtcatg gttgtcgttg acggcaagtc ctacgtagag 6300  
 aaactcgtg taaagtaa 6318  
 <212> Type : DNA  
 <211> Length : 6318  
 SequenceName : SEQ ID 556  
 SequenceDescription :  
 65 Sequence

-----

&lt;213&gt; OrganismName : Porphyromonas gingivalis W83

&lt;400&gt; PreSequenceString :

5	atgaaaacat	ctgaaagaat	attaagttat	ttcttcctct	tatgtgctgt	attcagtcctg	60
	ggctcatgcg	aaggacttta	tgcacaggta	actttcccaa	attattcgcc	tacggcggt	120
	tcgtccattg	ctgtatgttc	tggagaagag	acattgatca	ttgactttac	tgtagtcag	180
	gaggattcga	atggatcaa	agttaatgtg	aaacttgccg	acgggtgcga	gtatgtggtc	240
	ggaacggctg	tcgtaagtgt	tacacagggc	aatgcagtga	cggtagcgga	aaccaatgtt	300
	tctaataccga	acgaacctgt	atttaacggta	aaatcgccgg	atggaaacaa	tgtggtagag	360
10	cttggaaacca	tcgttaagct	gacgattaag	aggagagctg	tctgtaccgc	atggagcaat	420
	gccattaatg	ctgccgaaac	gggttttgtc	ttcaaaagaca	aggtaacggg	gactatcgcc	480
	gatcatagtg	atagcaaggga	atcaaaactcc	tattcggttaa	actatocgaa	cctgacgatc	540
	aaacagcctg	cgccgcgaag	gaacaagcag	attgggggaga	ccatcgtagc	agagttttct	600
	ataaccaatg	gttctcagaa	cccgaccag	acgatttato	tttcgataga	gtatccgat	660
15	gaagcctacc	tcacaggggt	ggggggcgatg	acgcttcagg	ctaaactggg	tgcttccggc	720
	acctatgccg	atcttactcc	taccgtcact	aacggtaagg	tcgcgatcta	tacactttcg	780
	ggttccagtt	tggggcctga	tcctctcttg	accaacggcg	agatcatcta	tctgaaagaa	840
	acatttaagc	tgaaaacttg	tgcacgggtt	acggctctata	gggtagggtg	gggttgtagc	900
	atagatagcc	agtgtgagat	aaaaactacc	gctgctacaa	ttactatggc	agctgggtgcg	960
20	gctaataatca	cgggatattc	agttactggg	cctgattatc	gttctocaac	ttttctctct	1020
	tgccaacccg	ttgagttgac	tattaagttc	tcaaatcccg	gtgctgggtg	ctctatgggg	1080
	gcagcattca	atatcaatc	tattggtaga	tccgactatt	atagaccaag	agggtttgtt	1140
	ttacacgaat	ttattgatgt	caaagtaaac	ggtaagccgg	taacgaattt	caaaaccgat	1200
	ggctcagagc	tcgacctctg	ttttgatgga	cagtttacag	aagatcctga	cggaccgggg	1260
25	gttgggttgg	atgatgttga	cggtgacgga	ttttatgatg	atcttctctg	cggagctact	1320
	attacgattg	ctgtaacggg	gcggctaaag	ttgttcagct	ttacggcatg	caacaacgct	1380
	ccaaatgatt	tgtccgatag	gggcttgatt	cttaaaacac	tatatcagac	atcttgtgat	1440
	agaacctcat	ggatagatcc	caacacgtgg	ttcaatcttt	ctagtactca	tttgtatttg	1500
	tctcgtgagt	cggtacaaga	tgcctctcac	atgcctactg	taatagagaa	ggatacgcct	1560
30	ttcgacctga	agataatgac	ttcctactat	tccatcctca	gctcatataa	taatatattg	1620
	tacgccaatc	ccaatacgcg	gtatgtggta	gaaatagtat	tcccgcgaagg	tatgactatg	1680
	cctcccaaat	cggatataga	atggaccaat	ataaaaaatc	atccgataga	cgggtcctta	1740
	gttttcactc	caccgattaa	cctccctgat	gcaaatatca	cgacatcagg	aaacacaatg	1800
	actatcgttt	cgcccagcca	agaaagagg	ttgttaaccc	tccatgggtg	gaaatacagc	1860
35	tgtacaaaata	atcacgaaat	gggtgtggag	tataagatta	gagagggtatt	caactacctt	1920
	cacttccctg	attgtctttg	cccggtaggt	cctatttatgt	gtaaacgggc	aaagcggtat	1980
	gtttttgggt	gcgatcctcc	ctggcgtaga	ggtagggaaa	cttcgggtgcc	taagatagaa	2040
	ctgtccgaca	attcggttgg	ctggacggat	tatacagatg	ggaccogtca	atctcgtagc	2100
	aatatatcgg	cttacgactt	ggctaaagcc	ctatatatgg	acgaagtcaa	cattacagcg	2160
40	acttctatcc	agcatggtag	tgcttcgtct	ttggggcgccc	gttttgtttt	ggctacgggt	2220
	gtcgatcgag	tagaaacgct	tactcctctt	tcggccgata	ttaagatctt	cctgtatggg	2280
	gttcagattg	atctcgtaga	tggatatacg	acatccggtt	caatacgcg	aaataataat	2340
	gcagagcagg	tgatcgactg	ggattttact	tcaatccttc	ctgctgggtg	attgcttgat	2400
	agagacaaaag	tggatgttgt	taccggttat	cggttaacat	cccagaatgc	tcataagagta	2460
45	gatacgcaag	ctggtaggga	gtggttcttc	tacaactcta	ccgccaatgt	gtcaccgata	2520
	tgggatgaag	ccaattgctt	aacttgtctc	atacttgtgc	ccgagatata	catcatgggt	2580
	acttttgttg	taaacgggtac	cgatccacat	gtcatttcac	aatgtactcc	aacagatctg	2640
	ggacgcggtg	ctaaccacta	cgcccgctct	ttcggtctctg	gtgcatttga	atatggcaat	2700
	gaatatcgct	ctgggtgtaaa	gattagaaat	atctatctga	aagtaccgaa	gtcctacacg	2760
50	ctgaataggg	tggagtatag	caatcacgct	aaccatagtt	cgttagggtac	aaccatgcct	2820
	ttcgaggaaa	taaatcatac	agatgtgact	tcacagggtg	aatataacat	ctataagtat	2880
	caacttgcag	acaacgaaaa	ggcgcacttc	aatactacag	taaaaaatgc	ctatggagca	2940
	gctcttaaaag	taaatgtatc	tcccacttgt	gcgtcgtctg	ctgtagcaac	taattatgat	3000
	aaaatttcat	actatgtcga	ttacattgac	tattactatt	atgcagcaac	gcagccaaca	3060
55	gtacctataa	gccttgacat	agtagccgat	caatcggtctg	gcagcaacgg	aatctacagt	3120
	gtttccgccc	tcaatgttta	caacaggcct	atcctttata	ctaacaaacc	ttctattgcg	3180
	ctcgtcaate	agtcagggtga	ggtagagctt	gtgggtaaaa	cgggagagtg	gaagctgcgt	3240
	atcagcaacc	catcgagtgc	aacggctccc	tatgtttggg	tggcattgcc	tacaacatcg	3300
	gggctgacca	tcgaaaaagt	aactgatgcg	gcaggtagctg	aaatggcggt	tacaacttat	3360
60	tctgggtggca	agatgtatcg	tttgtcgga	gctgtgtgtc	cagtaggttc	tgcgcttgac	3420
	tataaccattc	actttaccta	ttctggttgc	tctcctatcg	ctttgaaggc	gatggggggc	3480
	tggacactgt	gtgcatatcc	ccttagtttg	gatgagtatg	tttgagtttc	gcaggtgatc	3540
	gatctcaagc	tcaagccact	gccagctgcc	atggagctta	ctgagatagc	tgttccagat	3600
	cctacagctg	ctgctacatt	gtgtagtaca	ttggaatata	tttacagcat	tcaatcgaca	3660
65	gataatgcga	acgtttatag	tccacttttc	agcatcttcc	ccgaagaggg	attggtgggt	3720
	acaccgaatc	aggtacaggt	ggaatatcc	gcccgttccg	gtaattgggc	tgactccaat	3780
	gtggtcaata	attccgtcaa	tctgttgcag	catcctgcac	tgactaccat	aggctatctc	3840

```

aagggcctga aagaggggga atccaacgac aatcaacgta aaatttttgt gaagttctac 3900
ataaagaccg agtggttcgtt cgtatctggc aagaacttcc gtgtaagagc tgacggccgt 3960
aatgcttgta atcagaatgc caagggatcg ggtcttgcca taagtacgcc tccaattaga 4020
ataaatggag ctatagagcc ctacacgact tctgcttcta cgcagcttgt tacgaccaca 4080
5 acatcacaaat cggactgtaa agctcccaaa agagtaaaag tgggtgcaaac ggtcgtaggt 4140
ggagaaacta cccccaaggc atatttggaa atcacgctgc cgttgggctt taagtatgtg 4200
acgggttctt atgctccgga caatacgcac ccgggaggag tcaatgcctc acctgccgga 4260
acggaagaag tcactttgac cgcgaacggt gaagacaaga ttaagataaa tgtcaaggcc 4320
ggtctgacgt caggtcaatc gtttgcttat acactcgaaa tgaagggaaga cgatgataat 4380
10 gtgcccgctt gtggcaatca taccatcgaa attgtcaatg ttgaggagat tgaagggtttg 4440
tgggtgtaag gctgttcagt tgcagaaact ttggtcgtca cgggtgcca caagtttgaa 4500
tttgagcttg ataagcctta cttggatatt acggttatth cagcagtatc gactttcagt 4560
ggtggttaagg aaaatcttac aattgagtat aaggtaagca atacatcgac caccagcct 4620
ctgaaacggg gagcggttgt aacgctgttc agcgataagg ataacaatca agtcttctcc 4680
15 ggcggagatg ttgctgttgc aacacaggag ttggtcgcag aaataactaa taccacacct 4740
cttacgcaga taatgaaggt aaaaggagtg agctcttccc atacgggcaa tttggttctt 4800
acgatactgc ccaaagacgg ttgctactgt gagatcaaat cccctatggt cacgttaaac 4860
catcttcctt cgaactactg gatcgaggga actgtaggtg agcctaacga atggaaagag 4920
ccgaacaact ggaccaatga ccaagtctcc gatgcggcag aggatgttga attcgccact 4980
20 gaggtgaata acccgactga tccgaataat ccgaagtcgg gtcctgcgaa ggagaacctg 5040
catctggacg atatacacca gaatggcaca gccggctcgc ttatcggcaa cctgatcaat 5100
gactctgcga aagatcttgt aatcacacgc gccaatcaat tgacgatcaa cggcggtggt 5160
gaggataaca atccgaatgt cggtagcatc gtcgtgaagt cgtcgaaaga caatcctacg 5220
gggacgttgc ttttcgcca tccgggcaat aatcaaaatg taggggggac tgtcgagttt 5280
25 tacaatcagg gatattgatt tgccgattgt ggtatgtatc gcaggagctg gcagtatctc 5340
ggatccctg tcaattactc agattttcca ttgatcatg ttgatggaaa cgcgaccgtc 5400
aaccaatggg ttgagccttt caatggcgat aagtggcggc ctgcacctta tgcacctgat 5460
acaaagcttc agaatttcaa gggctatcag atcacgaatg acgtgcaggc acagcctacg 5520
ggagtttaca gcttcaaggg tacgctttgt gtgtgcgatg ccttcttgaa cctgacacgc 5580
30 acgtccggtg tcaactactc gggcgccaac ttgatcggca actcatacac tggagctatc 5640
gacatcaagc aaggtattgt cttcccgccg gaagtcgagc agacggtgta tctgttcaac 5700
acgggaacac gcgaccagtg gcgtaagctt aatggaagca cggtttcagg ctatcgagcc 5760
ggtcagtacc tctctgtacc taagaataca gccgggtcagg acaatcttcc ggatcgtatt 5820
ccatccctgt attccttctt ggtgaagatg cagaacggag cctcttgtag gttgcagatc 5880
35 ttgtacgata agctgctcaa gaacacgact gtaaacacgc gtaatggtac gcagatcaca 5940
tggcgatccg gcaactccgg atcggcgaaat atgcccgtcac ttgtgatgga tgttcttggt 6000
aatgagtcgg ccgaccgttt gtggatcttt accgatgggg gtctttctgt cggattcgac 6060
aacggtcggg atggtcgcaa gctgactgaa aaaggtttgt cacaacttta tgcgatgtct 6120
gacatcggtg atgataaatt ccagggtgca ggggttccgg agttgaataa cctgctgac 6180
40 ggcttcgatg cggataagga tggtaaatc acgttggagt ttgctctttc ggatcatttt 6240
gcgaaaggcg gaggtttctt tgaggatctt agccgtggag ttacacggcg agtagtcgac 6300
ggcggttcgt attcattcga tgccaagcga ggagactccg gggctcgttt ccgtctctct 6360
tatgacgaag agtgggttga atcggcgag gtttctgttt tgggttggtac ggccgggaag 6420
cgaatcgtaa tcacgaataa cagtgagcat gcctgtcagg ccaatgttta tacaactgac 6480
45 ggaaaacttc tgattcgatt ggacgtaaaa cccggaagta agtctatgac ggaaccattg 6540
gtcgatggag tctacgttgt cagtctgcaa agtcctgcca cgagtagcaa tgttaaggaaa 6600
gtttagtaca actaa 6615

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 6615

50 SequenceName : SEQ ID 557

SequenceDescription :

Sequence

-----

55 &lt;213&gt; OrganismName : Porphyromonas gingivalis W83

&lt;400&gt; PreSequenceString :

```

atgaacaaat ttacaaaatc acttttgcag tcaggactgg ctgccttcgt gtcgatggca 60
actgcactga ccgcttctgc acagatttcg ttcggagggg aacccttgag tttctcttca 120
agatccgccg gaacgcattc attcgacgat gcaatgacta tccgccttac tccgatttcc 180
60 aatccggaag acctgatcgc acagagccgt tggcaatcgc aaagagatgg ccggcccgtc 240
cggataggac aagtaatacc ggtggatgtg gactttgcat ccaaggcttc gcacatctct 300
tccatcggag acgtagatgt atatcgccct caattcaagt tggaggagag caaagccatt 360
acgctttatt acgatgcatt caatatccg gaaggcgagc gcctctatat ctataccccc 420
gacctgaaa ttgtgttggg agcatatacg aacgccactc atcgccgcaa cggagctttt 480
65 gccacagagc cgttaccggg gagttagctt attatggatt atgaagtgtc tcgaggaggg 540
actttgcctg acatcaagat ctccggtgcg ggttatatat tcgacaaagt cggcgagacc 600
cccgtaacgg ataaccatta cgggatcggg gaggacgatt cggattcgga ttgcgagatc 660

```

	aacatcaatt	gtcctgaagg	tgcagactgg	caggcagaga	agaacgggtg	ggtgcaaatg	720
	atcatggtaa	aaggacagta	tatctcaatg	tgctcaggca	acctgctcaa	taatacgaaa	780
	ggagacttta	ctccgctgat	catttctgcc	ggacactgtg	cttccataac	aaccaatttc	840
	ggtgtaacgc	aatccgagtt	ggataagtgg	atcttcactt	tccactatga	aaaaagagga	900
5	tgcagcaatg	gtacattggc	catcttccgt	ggcaacagta	tcacogggagc	ttccatgaag	960
	gcttttctcc	cgatcaaaagg	taaattccgat	ggctctttgc	tgcaactcaa	cgatgaagtc	1020
	cctctgcgct	atcgtgtcta	ttacaatgga	tgggacagta	cgcccgatat	tcctctcgagc	1080
	ggtgcccggta	ttcatcatcc	ggccggagat	gcatgaaga	tttccatcct	aaagaagact	1140
	ccggctctga	atacatggat	ctcctccagt	ggttccggag	ggactgacga	tcacttctat	1200
10	ttcaaatccg	atcaagggtg	tacggaagga	ggatcgctcg	gttcttctct	cttcaatcag	1260
	aataagcacg	tggtcggcac	actgacggga	ggtgccggca	attgtggcgg	gacggagttc	1320
	tacggcagac	tgaacagtca	ttggaacgag	tatgcattcc	atggcaatac	gagccgcatg	1380
	gacatctatc	tggatcccca	aaacaatggc	cagacgacca	tcctcaacgg	aacgtatcgt	1440
	agcgggtata	agcctttggc	ctctgtgccc	ctctgtattg	tgcaagtctac	aggcagtcag	1500
15	gtcgaattga	attggacggc	tggttctgcc	gatcaatatc	catcatctta	tcagggtcgaa	1560
	taccacatat	tccgaatagg	aaaggaaata	gctacgacaa	aggagttgtc	ctattcggat	1620
	gccatcgacg	aaagtattat	cggtagcggg	atcattcgat	acgaagtaag	cgcacgcttc	1680
	attatctccc	atccttttga	tggagtggaa	tcttataagg	atacggacaa	gacttctgcc	1740
	gaccttgcca	taggagacat	tcagaccaag	ctgaagccgg	acgtaaacacc	tctccccgga	1800
20	ggaggagtat	cattaagctg	gaaagtccct	ttcttaagcc	agttgggttc	ccgattcgga	1860
	gaaagcccca	atcctgtgtt	caaaaccttt	gaagtgcctt	atgtttctgc	cgcagccgca	1920
	caaaccccca	atcctcccgt	tggcgtagtc	attgcagaca	agtttatggc	cggtacatat	1980
	cccgaaaagg	ctgctatcgc	tgccgtttat	gtaatgccat	ccgctccgga	ctctactttc	2040
	cacctcttcc	tcaagagcaa	cacaaaacaga	agattgcaga	agggtgacaac	tcctctcgat	2100
25	tggcaggccg	gaacatgggt	gaggatcaat	ttggataagc	cgttcccggg	gaataatgac	2160
	catatgcttt	tgccggtgat	cagaatgcct	aactaagaca	agctcaatcg	tgctatccgt	2220
	tatgtaagaa	atccggataa	ccttttctcc	attaccggta	agaagatttc	atataacaac	2280
	ggagtctctt	tcgaaggcta	cggaataccc	tcgctcttgg	gctatatggc	tatcaaatat	2340
	ctgggtggtta	ataccgatgc	tccgaagatc	gatatgtcgc	ttgtacagga	gccttatgct	2400
30	aagggaacga	atgtgcgtcc	attccccgaa	ttggtcggca	tatatgtcta	taagaacgga	2460
	acatttatcg	gcacacagga	tccatccgtc	acaacttatt	cggtttcaga	cggaaacagag	2520
	agcgtatgaat	acgaaataaa	actggtatat	aagggatcgg	gcatttcgaa	tggcgttgct	2580
	cagattgaga	ataacaatgc	tgctgttgca	tatccgtctg	ttgtaacaga	tcgtttcagc	2640
	attaagaacg	ctcatattgt	tcacgctgcc	gccctctact	cattggatgg	caagcaggtt	2700
35	cgttcttgga	acaacctccg	caatggcgtg	acattcagtg	ttcaaggact	tacggccggg	2760
	acttatatgc	tcgttatgca	gacggcacaac	ggcctgtgta	gccaaaagat	cgtgaagcag	2820
	tag						2823
	<212> Type : DNA						
	<211> Length : 2823						
40	SequenceName : SEQ ID 558						
	SequenceDescription :						
	Sequence						
	-----						
45	<213> OrganismName : Porphyromonas gingivalis W83						
	<400> PreSequenceString :						
	atgaaaaact	tgaacaagtt	tggttcgatt	gctctttgct	cttccttatt	aggaggaatg	60
	gcatttgcgc	agcagacaga	gttgggacgc	aatccgaatg	tgagattgct	cgaatccact	120
	cagcaatcgg	tgacaaaagg	tcagttccgt	atggacaacc	tcaagttcac	cgaagttcaa	180
50	acccctaagg	gaatggcaca	agtgcggacc	tatacagaag	gggttaatct	ttctgaaaaa	240
	gggatgccta	cgcttcccat	tctatcacgc	tctttggcgg	tttcagacac	tcgtgagatg	300
	aaggtagagg	ttgtttcctc	aaagttcatc	gaaaagaaaa	atgtcctgat	tgcacccctcc	360
	aagggcatga	ttatgcgtaa	cgaagatccg	aaaaagatcc	cttacgttta	tggaaagagc	420
	tactcgcaaa	acaaattctt	cccgggagag	atcgccacgc	ttgatgatcc	ttttatcctt	480
55	cgtgatgtgc	gtggacaggt	tgtaaaacttt	gcgcctttgc	agtataaccc	tgtgacaaag	540
	acgttgcgca	tctatacggg	aatcactgtg	gcagtgcgag	aaacttcgga	gcaaggcaaaa	600
	aatattctga	acaagaaagg	tacatttgcc	ggctttgaag	acacatacaa	gcgcatgttc	660
	atgaactacg	agccagggcg	ttacacaccg	gtagaggaaa	aacaaaatgg	tcgtatgatc	720
	gtcatcgtag	ccaaaaagta	tgaggggagat	attaagagatt	tcgttgattg	gaaaaaccaa	780
60	cgcggtctcc	gtaccgaggt	gaaagtggca	gaagatattg	cttctcccgt	tacagctaata	840
	gctattcagc	aattcggttaa	gcaagaatac	ggcaagaag	gtaatgattt	gacctatggt	900
	cttttgattg	cgcatcacaa	agatatctct	gccaaaatta	ctccggggat	caaatccgac	960
	cagggtatatg	gacaaatagt	aggtaatgac	cactacaacg	aagtcctcat	cggtcggttc	1020
	tcattgtgaga	gcaagagagga	tctgaagaca	caaatcgatc	ggactattca	ctatgagcgc	1080
65	aataataacca	cgaagacaaa	atggctcggt	caggctcttt	gtattgcttc	ggctgaagga	1140
	ggcccatccg	cagacaatgg	tgaaagtgat	atccagcatg	agaatgtaat	cgccaatctg	1200
	cttaccacgt	atgggtatata	caagattatc	aaatggttatg	atccgggag	aactcctaaa	1260

	aacattatttg	atgcttttcaa	cggaggaatc	tcgttggcca	actatacggg	ccacggtagc	1320
	gaaacagctt	gggtgtacgtc	tcacttcggc	accactcatg	tgaagcagct	taccaacagc	1380
	aaccagctac	cgttttatttt	cgacgtagct	tgtgtgaatg	gcgatttcct	attcagcatg	1440
	ccttgtttcg	cagaagcatt	gatgcgtgca	caaaaagatg	gtaagccgac	aggtagctgt	1500
5	gctatcatag	cgtctacgat	caaccagctc	tgggcttctc	ctatgcgcgg	gcaggatgag	1560
	atgaacgaaa	ttctgtgcga	aaaacacccg	aacaacatca	agcgtacttt	cggtgggtgc	1620
	accatgaacg	gtatgtttgc	tatggtggaa	aagtataaaa	aggatgggtg	gaagatgctc	1680
	gacacatgga	ctgtattcgg	cgaccctcgc	ctgctcgttc	gtacacttgt	cccgcacaaa	1740
	atgcagggtta	cggtctccggc	tcagattaat	ttgacggatg	cttcagtcaa	cgtatcttgc	1800
10	gattataaatg	gtgctattgc	taccatttca	gccaatggaa	agatgttcgg	ttctgcagtt	1860
	gtcgaaaatg	gaacagctac	aatcaatctg	acaggtctga	caaatgaaag	cacgcttacc	1920
	cttacagtag	ttgggttacaa	caaagagacg	gttatttaaga	ccatcaacac	taatgggtgag	1980
	cctaacccct	accagcctgt	ttccaaactg	actgctacaa	cgcagggtca	gaaagtaacg	2040
	ctcaagtggg	atgcaccggg	cacgaaaacc	aatgcaacca	ctaataccgc	tcgcagcgtg	2100
15	gatggcatatc	gagaactggg	tcttctgtca	gtcagcgtatg	ccccgaact	tcttcgcagc	2160
	ggtcaggccg	agattgttct	tgaagctcac	gatgtttgga	atgatggatc	cggttatcag	2220
	attctttttg	atgcagacca	tgatcaatat	ggacaggtta	taccagtgta	taccatact	2280
	ctttggccga	actgtagtgt	cccggccaat	ctggtcgtc	cgttcgaata	tacgggtccg	2340
	gaaaatgcag	atccttcttg	ttccctacc	aatatgataa	tggatgggtac	tgcacccgtt	2400
20	aatataccgg	ccggaactta	tgactttgca	attgctgctc	ctcaagcaaa	tgcaaagatt	2460
	tggattgccg	gacaaggacc	gacgaaagaa	gatgattatg	tatttgaagc	cggtaaaaaa	2520
	taccatttcc	ttatgaagaa	gatgggtagc	ctgaattgac	tataagcgaa	tataagcgaa	2580
	gggtggtggaa	gcgattacac	ctatactgtc	tatcgtgacg	gcacgaagat	caaggaagggt	2640
	ctgacggcta	cgacattcga	agaagacggg	gtagctgcag	gcaatcatga	gtattgcgtg	2700
25	gaagttaagt	acacagccgg	cgatatctccg	aaggtagtga	aagacgttac	ggtagaagga	2760
	ttcaatgaat	ttgctcctgt	acagaacctg	accggtagtg	cagtcggcca	gaaagtaacg	2820
	cttaagtggg	atgcacctaa	tggtaccccg	aatccaaatc	caaataccga	tccaaatccg	2880
	aatcccgga	caactacact	ttccgaatca	ttcgaaaatg	gtattcctgc	ctcatggaag	2940
	acgatcgatg	cagacgggtg	cggtgacgtg	tggaagcctg	gaaatgctcc	cggaatcgct	3000
30	ggctacaata	gcaatgggtg	tgtatattca	gagtcattcg	gtcttggttg	tataggagtt	3060
	cttaccctcg	acaactatct	gataacaccg	gcattggatt	tgcctaaccg	aggtaagttg	3120
	actttctggg	tatgcgcaca	ggatgcta	tatgcacccg	agcactatgc	ggtgtatgca	3180
	tcttcgaccg	gtaacgatgc	atccaaacttc	acgaatgctt	tgttgggaaga	gacgattacg	3240
	gcaaaagggtg	ttcgtcgcgc	ggaaagctat	ctggttcgta	tacagggtac	ttggcgccag	3300
35	aagacggtag	accttcccg	aggtacgaaa	tatgttgctt	tccgtcactt	ccaaagcacg	3360
	gatatgttct	acatcgacct	tgatgaggtt	gagatcaagg	ccaatggcaa	gcgcgcagac	3420
	ttcacggaaa	cggttcgagtc	ttctactcat	ggagaggcac	cagcgggaatg	gactactatc	3480
	gatgctcatg	gcggcaccga	cgtagtaagc	tgtctgtctt	ccggacaatt	ggactggctg	3540
40	acagctcatg	gcggcaccga	cgtagtaagc	tctttctcat	ggaatggaa	ggctttgaat	3600
	cctgataact	atctcatctc	aaaggatggt	acaggcgcaa	cgaaggtaaa	gtactactat	3660
	gcagtcacag	acgggttttcc	cggtgacac	tatgcgggtg	tgatctccaa	gacggggcacg	3720
	aaacggcgag	acttcacggg	tggttttcgaa	acggacgccta	acggaataaa	taaggggcgga	3780
	gcaagattcg	gtctttccac	ggaagccgat	ggcgccaaac	ctcaaagtgt	atggatcgag	3840
	cgtacggtag	atttgccctgc	gggcacgaag	tatgttgctt	tccgtcacta	caattgctcg	3900
45	gatttgaact	acattctttt	ggatgatatt	cagttcacca	tgggtggcag	ccccaccccg	3960
	accgattata	cctacacggg	gtatcgtgat	ggtacgaaga	tcaagggaag	tttgaccgaa	4020
	acgaccttcg	aagaagacgg	cgtagctacg	ggcaatcatg	agtattgcgt	ggaagtgaag	4080
	tacacagccg	gcgtatctcc	gaagaaatgt	gtaaacgtaa	ctgttaattc	gacacagttc	4140
	aatctgttaa	agaacctgaa	ggcacaaacc	gatggcgccg	acgtggttct	caagtgggaa	4200
50	gccccgagcg	caaagaagac	agaaggttct	cgtgaagtaa	aacggatcgg	agacggtctt	4260
	ttcgttacga	tccaacctgc	aaacgatgta	cgtgccaaac	aagccaagggt	tgtgctcgca	4320
	gcagacaacg	tatggggaga	caatacgggt	taccagttct	tgttggatgc	cgatcacaat	4380
	acattcggaa	gtgtcattcc	ggcaaccggg	cctctcttta	ccggaacagc	ttcttccgat	4440
	ctttacagtg	cgaacttcga	gtatttgatc	ccggccaatg	ccgatcctgt	tggtactaca	4500
55	cagaatatta	tgtttacagg	acagggtgaa	gttgtaatcc	ccggtggtgt	ttacgactat	4560
	tgcattacga	acccggaacc	tgcacccgga	aagatgtgga	tgcagggaga	tggaggcaac	4620
	cagcctgcac	gttatgacga	tttcacattc	gaagcaggca	agaagtacac	cttcacgatg	4680
	cgtcgcgcg	gaatgggaga	tggaaactgat	atggaagtcg	aagacgattc	acctgcaagc	4740
	tatacctata	cagtcctatc	tgacggcagc	aagatcaagg	aaggctcgac	cgaacgacc	4800
60	taccgcgatg	caggaatgag	tgcacaatct	catgagtatt	gcgtggaagt	taagtacaca	4860
	gccgcgctat	ctccgaagggt	ttgtgtggat	tatattcctg	acggagtggc	agacgtaacg	4920
	gctcagaagc	cttacacgct	gacagttgta	ggaaagacga	tcacggtaac	ttgccaaggc	4980
	gaagctatga	tctacgacat	gaacggctcg	cgtctggcag	ccggtcgcaa	cacgggtgtt	5040
	tacacggctc	aggcgggcta	ctatgcagtt	atggttgctg	ttgacggcaa	gtcttacgta	5100
65	gagaactcgc	ctatcaagta	a				5121

<212> Type : DNA  
 <211> Length : 5121

SequenceName : SEQ ID 559  
SequenceDescription :

## Sequence

5

-----

&lt;213&gt; OrganismName : Porphyromonas gingivalis W83

&lt;400&gt; PreSequenceString :

```
atgaaaagaa aaccgctatt ctcagccctt gtaatccttt cgggcttctt cggatcgggt 60
caccgggcct cagcacagaa agttcctgca ccgcgcgatg gcgagcgcat tatcatggag 120
10 ctaagtgaag cogatgtgga gtgtacaatc aaaatagaag ccgaggatgg ctatgccaac 180
gacatttggg cagacctcaa cggaaacggc aagtagcatt cgggggagag gctcgattca 240
ggtgagtttc gtgatgttga gttcagacaa acaaaggcca tcgtctatgg caaatggcc 300
aaattcttgt ttagaggttc ttctgcaggg gactatggtg ctacctttat agatattagc 360
aattgtaccg gctgactgc ttctgactgc ttggccaatc tgctgacaga actcgatetg 420
15 tccaaagcaa acggtctgac ttttgtaaac tgcggcaaaa accagctgac caagcttgac 480
ctgcccgcaa atgcgacat tgagacgtg aactgctcca aaaacaagat aacgagtctc 540
aacctatcga cctataccaa gctgaaagag ctttatgtgg gcgacaacgg gctgacagcc 600
ttggatctct ccgccaatac gtcctcgaa gagctggtgt attctaaca cgaggtgact 660
acgataaac tgtctgcaa tacgaacttg aaaagcctgt attgcataaa caataagatg 720
20 accggactcg atgtcgcagc caacaagag ctgaaaatac tccactgcaa caacaatcag 780
ctgacgcgcc tcaatctctc ggccaatacc aagctgacga ctctaagctt cttcaacaac 840
gagctgacaa atactgatct ctccgacaa acggcttttg agtggctttt ctgcaacggc 900
aataagctga cgaagctaga tgtatctgcc aacgccaatc tgatagcact gcaatgcagc 960
aacaaccagc tgactgctct ggatctgtca aaaacgcca aactgacaac gttgaattgc 1020
25 tactccaacc ggatcaaaga taccgccatg cgtgcattga tcgaaagcct gctacgatc 1080
actgaaggag aaggcagggt cgttccttac aacgacgatg aaggaggaga agaggagaac 1140
gtgtgtacaa ccgaacacgt ggaaatggcc aaggccaaga attggaaggt acttacctc 1200
tggggagagc ctttccccgg aataacggct ttgatttcca tcgaagggtga gagcgaatat 1260
tccgtatatc ctcaagatgg catcctctac ctctccggtg tggagcaggg cttgcccggt 1320
30 caggtatata ccgtgggagg aagcatgatg tactcatctg tcgcttcggg atcagccatg 1380
gaaatacagc tcccagagag tgcagcctat gtagtacgta tcggcagcca tgcgatcaaa 1440
accgcgatgc cgtaa 1455
```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1455

35 SequenceName : SEQ ID 560  
SequenceDescription :

## Sequence

-----

40 &lt;213&gt; OrganismName : Shigella flexneri 2a str. 2457T

&lt;400&gt; PreSequenceString :

```
atgaaacgag ctattaccct gtttgctgta ctgctgatgg gctggtcggg aaatgcctgg 60
tcattcgcc gtaaaaccgc caatgggtacc gctatcccta ttggcgggtg cagcgctaata 120
45 gtttatgtaa accttgcgcc tgcgtgaat gtggggcaaa acctggtcgt agatctttcg 180
acgcaaatct tttgccataa cgattatccg gaaaccatta cagactatgt cactactgcaa 240
cgaggctcgg cttacggcgg cgtgttatct aatttttccg ggaccgtaaa atatagtggc 300
agtagctatc catttccgac caccagcgaa acgcccggg ttgtttataa ttcgagaacg 360
gataagccgt ggccgggtggc gctttatttg acgctgtga gcagtgcggg cggggtggct 420
attaaagctg gttcattaat tgccgtgctt attttgcgac agaccaacaa ctataacagc 480
50 gatgatcttc agtttgtgtg gaatatctac gccataatg atgtggtggt gccactggc 540
ggttgtgatg tttctgctcg tgatgtcacc gttactctgc cggactaccc tggttcagtg 600
ccaattcctc ttaccgttta ttgtgcgaaa agccaaaacc tgggggtatta cctctccggc 660
acaaccgcag atgcgggcaa ctcgattttc accaataccg cgtcgttttc accagcgag 720
ggcgtcggcg tacagttgac gcgcaacggg acgattattc cagcgaataa cacggtatcg 780
55 ttaggagcag taggaacttc ggcggtaagt ctgggattaa cggcaaatca cgcacgtacc 840
ggagggcagg tgactgcagg gaatgtgcaa tcgattattg gcgtgacttt tgtttatcaa 900
taa 903
```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 903

60 SequenceName : SEQ ID 561  
SequenceDescription :

## Sequence

-----

65 &lt;213&gt; OrganismName : Shigella flexneri 2a str. 2457T

&lt;400&gt; PreSequenceString :

atgggcatca aacaacacaa tgggaatacc aaagccgatc gtctcgctga attaaaaatc 60

	cggttcgccct	caattcaact	gataaaattt	ggcgctattg	gtttgaatgc	aattatcttt	120
	tccccctgc	tgatagctgc	tgatacagga	agtcaatatg	gcaccaatat	tactattaat	180
	gatggtgaca	gaattacagg	agataccgcc	gatccatcag	gaaacctcta	tggtgtaatg	240
	acccacgcag	gaaacacgcc	tggcaatatc	aacctgggta	atgatgtcac	cgccaatgtc	300
5	aacgacgcct	ctgggatatgc	aaaagggaatc	attattcagg	gcaaaaacag	ctccctgaca	360
	gctaaccgac	tcacagtaga	tgttggtggt	caaacctctg	ccatcggcat	taacttaatt	420
	gggtgactata	cccatgctga	cttaggcaca	ggcagcacca	tttagagtaa	cgatgacggc	480
	atcattattg	ggcatagctc	aacactaaca	gccactcaat	tcaccattga	aaactcgaac	540
	ggatataggcc	taaccatcaa	tgactatggc	accagtgtcg	atcttgggaag	cggaagtaaa	600
10	atcaagacgc	atggaagtac	aggtgtttat	atcgggtggtc	tcaacggcaa	taacgccaat	660
	gggtgtgcgc	gttttacggc	gacagacctg	acaatcgatg	ttcagggcta	cagcgccatg	720
	gggataaacg	tacagaaaaa	ctctgttgtc	gatctcggaa	caaacagtac	cattaaaacc	780
	aatggcgata	atgctcacgg	cctctggagc	tttggccagg	ttagcggcaa	tgcactcact	840
	gttgatgtaa	ctggagccgc	ggccaatggc	gtcgaagttc	gtggtggtag	aaccactatc	900
15	gggtgcagata	gtttatcttc	ttccgcgcag	ggcggtggcc	tcgtcaccag	tagttcagac	960
	gcgacaatca	atctttctgg	cacggcagcg	caacgaaaca	gcctcttttc	cgccggttct	1020
	tatggtgcct	cgcccagac	ggcaacggct	gttatcaaca	tgcaaaatac	cgatattacg	1080
	gttgatcgta	atggcgtctc	ggcgctgggt	ttgtggcgcg	tcagcggcgg	tagaataaac	1140
	ggagacagtt	tggctatcac	ggcgccagag	ggatttatgc	catgaccaac		1200
20	agccagatcg	acctcacgag	cgatctggtc	attgatatga	gtacaaccga	ccagatggcc	1260
	atcgcaacgc	aacatgacga	tggttatgcc	gccagccgca	tcaacgcctc	gggtcgtatg	1320
	cttatcaacg	ctggtcttct	ttccaaaggt	gggttaatca	atctggatat	gcaccctggg	1380
	tcggttttga	caggttcctc	cctcagcgat	aattgtcaatg	gcgggaaact	ggacgttgca	1440
	atgaataaca	gcgtctggaa	cgtaacaagt	aattctaatc	tcgacacgct	ggcgctgagc	1500
25	cattcaactg	tcgattttgc	cagccacggg	tcaactgccg	gcacaattac	cacattaaac	1560
	gtagagaacc	tgcgcggtta	cagtaccttt	attatgcgtg	ctgatgttgt	tggcgagggg	1620
	aatggcggtta	ataatagagg	ggattttattg	aatatcagcg	ggagt agtgc	tggtaatcac	1680
	gtattggcta	tccgcaacca	gggcagcgag	gccacaacgg	gaaatgaagt	tctgacagtg	1740
	gtaaaaacca	ctgacggcgc	ggcctcgttc	agcgcgtcct	ctcaggttga	gttgggggga	1800
30	tatctgtacg	atgtgcgtaa	aaatggcact	aactgggagc	tttacgcttc	cgggacagtt	1860
	ccggaaccga	ctcctaattc	tgaaccaca	ccagctcccg	ctcagcctcc	catagtcaac	1920
	cccgatccta	cgctgaacc	cgctcccacg	cctaacccca	ccacgaccgc	agatgctggc	1980
	ggcaattatc	tcaatgtcgg	ttactttattg	aactatgttg	aaaaccgtag	gctgatgcaa	2040
	cggtatgggtg	actgtcgaaa	tcagagtata	gacggtaata	tctggttgcg	cagttatggg	2100
35	ggaagcctgg	actcctttgc	cagtggcaaa	ctgacgggct	ttgacatggg	ttacagcggt	2160
	atccagtttg	gtggggataa	acgtctctct	gatgtaatgc	cgttgtatgt	cggtctgtat	2220
	attgactcaa	cacatgcatc	gccggactat	agcggaggcg	acggg accgc	acgttcagac	2280
	tacatgggaa	gtctgcgcag	ttacatggca	caaaaacggt	tttacagcga	tctcgttata	2340
	aaagcatcgc	gccagaaaaa	tagtttccac	gtactggaca	gtcagaaaca	cggcggttaac	2400
40	gccaacggca	ctgcgaatgg	aatgagcatc	tccttgggaag	ccggg cagag	gttcaacctg	2460
	tcccctactg	gttatggggt	ctatatagag	ccgcaaaccc	agctt acata	cagccaccag	2520
	aatgagatgg	ctatgcaagg	gagtaatggc	ctcaatatata	atctgaatca	ctacgaatcg	2580
	ctgctggggc	gtgccagcat	gatactgggg	tatgacatca	ccgcaaggcaa	cagccagctg	2640
	aatgtctatg	tgaagactgg	cgctatccgc	gagttttcag	gggat accga	atatctgttg	2700
45	aacgactccc	gggagaagta	cagtttcaaa	ggtaatggct	gggat aacgg	cgtggggagtc	2760
	agtcacagtc	ataacaaaca	gcacacattc	tatctcgaag	cggat tacac	gcaggggtaac	2820
	ctctttgatc	agaagcaagt	caacggagga	tatcgcttca	gcttt taa		2868
	<212> Type : DNA						
	<211> Length : 2868						
50	SequenceName : SEQ ID 562						
	SequenceDescription :						

## Sequence

-----

55	<213> OrganismName : Shigella flexneri 2a str. 24 57T						
	<400> PreSequenceString :						
	atgagtaagt	ttgttaaaac	agctatttgc	gcggcaatgg	tgatgggctg	gttcacctct	60
	acggcaacaa	tcgctgcggg	taacaacggg	actgcacgtt	tttacggcac	cattgaagac	120
	tcagtgtggt	ctatcgcttc	ggacgatcac	aaactgggaag	ttgat atggg	tgatatcggt	180
60	gccgaaaaac	tgaaaaataa	cggcaccacc	acgccgaaaa	gtttc cagat	tcgtctgcaa	240
	gattgcgtat	ttgatactca	ggaaacaatg	accactacct	ttact ggtac	cgtttcttct	300
	gcaaatagcg	gcaattatta	caccattttc	aataacgata	ccggg gcggc	atttaacaat	360
	gttagcctgg	cgatcggtga	ctctctgggt	acctcttaca	aaagcggcat	gggtattgac	420
	cagaaaatag	tgaaagacac	ttctaccaac	aaaggcaag	cgaagcagac	actgaacttt	480
65	aacgcctggc	tggctcggcg	agctgatgcg	ccagatctgg	gtaat tttga	agcaaatacc	540
	accttcacga	ttactttacct	gtaa				564
	<212> Type : DNA						



<211> Length : 564  
SequenceName : SEQ ID 563  
SequenceDescription :

5 Sequence

-----

<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

atgaaaaatta	aaactctggc	aatcggttgtt	ctgtcggctc	tgtccctcag	ttccgcagcg	60
gctctggccg	atactacgac	ggtaaatggt	gggaccattc	acttttaaagg	ggaagtgtgtt	120
aacgccgctt	gcgcagttga	tgcaggctct	gttgatcaaa	ccgttcagtt	gggacaggtt	180
cgtaccgcta	gcctgaagca	ggctggagca	accagctctg	ccgttggttt	taacattcag	240
ctgaatgatt	gcgataccac	tgttgccaca	aaagccgctg	ttgccttctt	aggtaccggca	300
attgatgcta	cgcgtactga	tgtactggct	ctgcagagtt	ctgctgcagg	tagtgcaaca	360
aacgttggcg	tgcagatcct	agacagaaca	ggcaatgctc	tgacgctgga	cggtagcgaca	420
tttagtgcac	aaacaaccct	gaataacggt	accaacacca	ttccgttcca	ggcgcgttat	480
tatgcaatcg	gcgagggaac	cccggttgca	gctaattgcg	atgcaacctt	caaggttcag	540
tatcaataa						549

<212> Type : DNA

20 <211> Length : 549

SequenceName : SEQ ID 564

SequenceDescription :

Sequence

-----

<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

atggcaagta	tttcatcgct	gggagtcggg	tcaggtctgg	atttaagttc	aatccttgat	60
agcctcaccg	ccgcgcaaaa	agcgacgcta	accctatatt	caaatacagca	atcgctcgttt	120
accgctaaac	ttagcgccta	cggtagcgtg	aaaagcgcgc	tgacgacttt	ccagaccgcc	180
aatactgcat	tgtctaaagc	cgatcttttt	tccgccacca	gcaccaccag	cagcaccacc	240
gcgttcagtg	ccaccaccgc	gggtaacgcc	atcgccggga	aatacaccat	cagcgtcacc	300
catctggcgc	aggcgcaaac	cctgaccacg	cgaccacca	gagatgatac	gaaaaacggcg	360
atcgccaaca	cgacagcaaa	actcaccatt	caacaaggcg	acgacaaaaga	tccgattacc	420
attgatatac	gcgcgggcta	ctcatcgtta	agcgggatcc	gtgatgccat	caacaacgca	480
aaagcggggc	taagtgcgag	catcattaac	gtgggtaacg	gtgaatatcg	tctgtcagtc	540
acatcaaatg	acaccggcct	tgataatgcg	atgacactct	cggtcagcgg	tgatgatgcg	600
ctacaaagtt	ttatgggcta	tgacgccagt	gccagcagca	acgggatgga	ggtctcggtc	660
gccgcccaga	atgcgcagct	gacggtaaac	aacgtcgcca	tgcgaaacag	cagcaaacact	720
atcagcgacg	cgctggaaaa	catcactctg	aaactgaacg	atgtcaccac	gggcaaccag	780
acgctaacca	tacttcagga	cacctccaaa	gtgcaaacgg	cgattaaaga	ctgggtgaat	840
gcctataact	cgctaataga	taccttcagc	agcctgacca	aatacaccgc	cgtagatgcg	900
ggagctgata	gccagagttc	tagcaatggc	gcactgctcg	gcgactccac	gctgcggacg	960
attcagacgc	agttgaagtc	gatgctgagt	aataccgtca	gttcttccag	ctataaaaacg	1020
ctggcgcaga	ttggatatcac	gaccgatccc	agcgatggca	aactggaact	ggatgccgcac	1080
aaactcaccg	ctgcactgaa	aaaagatgcc	agcggcgtag	gtgcattgat	tggtggcgat	1140
ggtaaaaaaa	ccggcatcac	aaccaccatc	ggcagcaacc	tgaccagttg	gctttcgaca	1200
acgggcatta	ttaaagccgc	taccgatggc	gttagtaaaa	ccctgaataa	gttaactaaa	1260
gactacaacg	ccgccagcga	tcgcattgat	gcgcaggtcg	cgcgctacaa	agaacaattt	1320
acccaactgg	acgtttttaat	gacctcgtta	aacagcacca	gcagctactt	aacgcagcag	1380
ttcgaaaaca	acagtaattc	caagtaa				1407

<212> Type : DNA

<211> Length : 1407

SequenceName : SEQ ID 565

53 SequenceDescription :

Sequence

-----

<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

gtggagggta	aagctgataa	tgtcgtactg	gaaaatggcg	gacgcctgga	tgtgctgacc	60
ggacacacag	ccactaatat	ccgcgtggat	gatggcgga	cgctggatgt	ccgcaacggt	120
ggcaccgccca	ccaccgtatc	catgggaaat	ggcgggtgtac	tgctggccga	ttccggtgcc	180
gctgtcagtg	gtacccggag	cgacggaaag	gcattcagta	tcggaggcgg	tcaggcggat	240
gcctgatgac	tggaaaaagg	cagttcatte	acgtgaaacg	ccggtgatac	ggccacggat	300
accacggtaa	atggcggact	gttcaccgcc	aggggaggca	cactggcggg	caccaccacg	360
ctgaataacg	gcgcataact	taccctttcc	gggaagacgg	tgaacaacga	taccctgacc	420

	atccgtgaag	gcgatgcact	cctgcagggg	ggcgctctca	ccggtaacgg	cagcgtggaa	480
	aaatcaggaa	gtggcacact	cactgtcagc	aacaccacac	tcaccagaa	agccgtcaac	540
	ctgaatgaag	gcacgctgac	gctgaacgac	agtaccgtca	ccacggatgt	cattgtctcag	600
	cgcggtacag	ccctgaagct	gaccggcagc	actgtgctga	acgggtgccat	tgacccccacg	660
5	aatgtcactc	tcgcctctgg	tgccacctgg	aatattcccc	ataacgccac	ggtgcagtcg	720
	gtggtggatg	acctcagcca	tgccggacag	attcatttca	cctccacccg	cacagggaag	780
	ttcgtaccgg	caaccttgaa	agtgaanaac	ctgaacggac	agaatggcac	catcagcctg	840
	cgtgtacgcc	cggatatggc	acagaacaat	gctgacagac	tggtcattga	cgggtggcagg	900
	gcaaccggaa	aaaccatcct	gaacctggtg	aacgccggca	acagtgcgtc	ggggctggcg	960
10	accagcggta	agggatttca	ggtggtggaa	gccattaacg	gtgccaccac	ggaggaaggg	1020
	gccttttatcc	aggggaataa	gctgcaggcc	ggtgccttta	actactccct	caaccgggac	1080
	agtgatgaga	gctggtatct	gcgcagtgaa	aatgcttatc	gtgcagaagt	ccccctgtat	1140
	gcctccatgc	tgacacaggc	aatggactat	gaccggattc	tggcaggctc	ccgcagccat	1200
	cagaccgggt	taagcggtag	aaataacagc	gtccgtctca	gcattcaggg	cgggtcatctc	1260
15	ggtcacgata	acaacggcgg	tattgcccgt	ggagccacgc	cggaaagcag	cggcagctat	1320
	ggcttcgtcc	gtctggaggg	tgacctgctc	agaacagagg	ttgccgggtat	gtctgtgacc	1380
	gcggggggtat	atgggtgctgc	tggccattct	tccgttgatg	ttaaggatga	tgacggctcc	1440
	cgtgccggta	cggtccggga	tgatgcggcg	agcctgggcg	gatacctgaa	tctgatacac	1500
	aacgcctccg	gcctgtgggc	tgacattgtg	gcccaggga	cccgccacag	catgaaagcc	1560
20	tcatcggaca	ataacgactt	ccgcgtccgg	ggctggggct	ggctgggttc	gctggaaacc	1620
	ggtctgccct	tcagtatcac	tgacaatctg	atgctggagc	cgcaactgca	gtacacctgg	1680
	caggcgactct	ccctggatga	cggccaggat	aacgcagttt	atgtgaagtt	cgggcatggc	1740
	agtgcacaac	atgtgcgtgc	cggcttccgt	ctgggcagcc	accacgatat	gaactttggt	1800
	aaaggcacct	catcccgtga	caccctgcgc	ggcagtgcca	aacacagttg	gcgtgaactg	1860
25	ccgggtgaact	ggtgggtaca	gccttctggt	atccgcacct	tcagctcccg	gggggacatg	1920
	agcatgggta	cagccgcagc	cggcagtaac	atgacgttct	caccgtcaca	gaatgggtacg	1980
	tcaactggacc	tgacggccgg	actggaagcc	cgtgtccggg	aaaatatcac	cctgggcgtt	2040
	caggccagtt	atgcccacag	catcaacggc	agcagcgctg	aaggttataa	cagtcaggcc	2100
	acactgaatg	taaccttctg	a				2121
30	<212> Type : DNA						
	<211> Length : 2121						
	SequenceName : SEQ ID 566						
	SequenceDescription :						
35	Sequence						
	-----						
	<213> OrganismName : Shigella flexneri 2a str. 2457T						
	<400> PreSequenceString :						
	atggcctttt	ctcaagcggg	tagcggatta	aacgctgccg	ccaccaacct	cgatgttatt	60
40	ggcaacaata	tcgccaaactc	cgccacctac	ggcttttaaat	caggcacggc	ctctttttgcc	120
	gatatgtttg	ccggttccgaa	agtgggactg	ggggtaaaaag	ttgccgggtat	cactcaggac	180
	tttaccgatg	gcacgaccac	caacacgggg	cgaggtctgg	acgttgctat	cagccagaac	240
	ggtttttttc	gtctggtaga	cagcaacggg	tcggtgttct	acagccgtaa	cggacaattt	300
	aagctggatg	aaaaccgtaa	cctgttgaat	acgcaagggt	tacagctgac	gggttaccgg	360
45	gtaaccggta	cgccgcggac	tattcagcaa	ggggcgaaatc	cgaccaatat	ttcgatcccg	420
	aataccctga	tggcagcgaa	aactaccacc	acggcgctga	tgacagatcaa	cctgaattcc	480
	agtgtaccgc	ttcctactgt	tacgccattc	agcgcagca	atgaggatag	ctataacaaa	540
	aaaggttcgg	tgactgtttt	cgacagtcag	ggtaatgctc	atgacatgag	cgtctatttt	600
	gtgaagaccg	gggataataa	ctggcaggtc	tacaccagg	atagcagtga	tccaaacagc	660
50	attgcgaaga	cagcgacaac	actggaattt	aatgctaattg	gcacattagt	ggatggtgcg	720
	atggcgaaata	atatcgcaac	cggcgcaatt	aacgggtgcag	aaccgcggac	gttttagtctg	780
	agcttcctca	actccatgca	gcaaaaatacc	ggcgctaaca	acattgtggc	aaccaccag	840
	aatggctaca	aaccggggcg	tctggtgagt	tatcaaatca	atgatgacgg	tacggttgct	900
	ggcaacaatt	ccaacgaaca	aacccaactg	ctggggcgaga	ttgtactggc	gaactttgcc	960
55	aacaacgaag	gtctggcatc	cgaaggcgac	aacgtctggt	ctgcgacgca	atcttctggc	1020
	gtggcgctgt	tggggacagc	cgggacggga	aactttggca	ctctgaccaa	cgggtgcgctg	1080
	gaagcgtcca	acgtcgatct	cagtaaaaga	ctggtcaata	tgatcgttgc	ccagcgtaac	1140
	tataagtcta	acgcccagac	catcaaaaacc	caggaccaga	tctcaaacac	gcgggttaac	1200
	ttacgctaa						1209
60	<212> Type : DNA						
	<211> Length : 1209						
	SequenceName : SEQ ID 567						
	SequenceDescription :						
65	Sequence						
	-----						
	<213> OrganismName : Shigella flexneri 2a str. 2457T						

```
<400> PreSequenceString :
atgaaactcg tgcacatggc cagtgggtta gcggttgcca ttgcgttggc ggcttgcgca      60
gataaaagcg cggatattca gacgccagcc cgggttgcaa atacgtctat ttcagcaaca      120
caacaacctg ctatccagca accgaatgtc tccggtactg tctggatccg tcagaaagtc      180
5  gcactgccgc ctgatgctgt gctgaccgtg acactttctg acgcgtcggt agccgatgca      240
ccgtcaaaag tgctggcgca gaaagcgggt cgtactgaag gtaaacagtc accattcagc      300
tttgttctgc catttaaccc ggcagatgtt cagccgaacg cgcgtattct gttgagtgcg      360
gcgattaccg tgaatgacaa actggtattt atcaaccgata ccgttcagcc ggtgatcaac      420
cagggcgcaa ctaaagccga cctgacattg gtgccgggtac agcaaacccg cgtgccgggt      480
10 caggccagcg gtggcgcaac gactaccgta ccttcgactt caccaactca ggtgaatccg      540
tcttcggcag ttcccgtctc tacgcaatat taa
<212> Type : DNA
<211> Length : 573
SequenceName : SEQ ID 568
15 SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
20 <400> PreSequenceString :
atgatcataa aaaaaagcgg tggctcgctgg cagctaagcc tgctggcgag cgtggtaatc      60
agtgcctttt ttctcaacac agcttacgcc tggcaacaag aatataatcg tgatacgcaa      120
cccggacatt ccacagagcg ttacacctgg gatagtgtac atcaacctga ttacaacgat      180
attttgtcgc aacgtattca aagtagccaa agggcgctgg gactggaagt caatctggcg      240
25 gaagaaactc ctgtggatgt gaccagcagt atgagtatgg gctggaattt tcttttatat      300
gaacagggtta caaccggccc ggtcgcggca ttacattacg atggcacaaac caactcgatg      360
tataacgagt ttggcgacag tactaccacg ctgaccgatc cgttatggca tggcagcggtg      420
agtagcttag gctggcgctg tgactcccggt cttggcgatc tccgaccctg ggcgcaaata      480
agctataacc agcaatttgg cgagaatatc tgggaaggcgc aatcaggcct gagccggatg      540
acggcgacaa accagaacgg caactggctg gatgtcaccg taggcgctga tatgttgctc      600
30 aatcaaaata ttgccgccta tgctgcgcta actcaggcag aaaataccac taataatagc      660
gactatctgt atacgatggg ggttagcgcc agatttttaa      699
<212> Type : DNA
<211> Length : 699
35 SequenceName : SEQ ID 569
SequenceDescription :

Sequence
-----
40 <213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
atgaaatggt gcaaacgtgg gtatgtattg gcggcaatgt tggcgctcgc aagtgcgacg      60
atacaggcag ccgatgtcac catcacggtg aacggtaagg tcgtcgccaa accgtgtacg      120
gtttccacca ccaatgccac ggtagatctc ggcatctttt attctttcag tcttatgtct      180
45 gccggggcgg catcggcctg gcatgatgtt gcgcttgagt tgactaattg tccggtggga      240
acgtcgaggg tcaactgccag cttcagcggg gcagccgaca gcaccggata ttataaaaac      300
caggggaccg cgcaaaacat ccagttagag ctacaggatg acagtggcaa cacattgaat      360
actggcgcaa ccaaaacagt tcaggtggat gattcctcac aatcagcgca cttcccgtta      420
caggtcagag cattgacggt aaatggcgga gccactcagg gaaccattca ggcagtgatt      480
50 agcatcacct atacctacag ctga
<212> Type : DNA
<211> Length : 504
SequenceName : SEQ ID 570
55 SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
60 <400> PreSequenceString :
atgaaaagag cgcctcttat aacaggactt ttgttgatat ccacatcctg cgcttatgcc      60
tctcaggag ggtgtggagc cgacagcact agcgggtgca caaattacag cagtgtgggt      120
gatgatgtta cgggtgaacca gacagataac gtgacaggac gggagtttac ctctgcaacg      180
ctaagtagca ctaactggca atacgcctgt tctgtctctg cgggtaaggc agttaaactt      240
gtctatatgg tcagccccgt acttaccacc actggacatc agacaggata ttacaaactc      300
65 aatgacagcc tggatattaa aaccacatta caggcaaacg acattccagg actcacaacc      360
gaccagggtg tctctgttaa ccccgatcc acacagataa aaagcagcac cgtatattct      420
gctgcaaccc aaacgggtgt ttgccagggt gacacgtctc gttatggacc cgttaatatatt      480
```

```
5  ggtgcaaata ccacctttac cctgtatgtc accaagccat ttctcggctc gatgaccatt 540
    ccgaaaaacg atattgccgt cattaagggc gcgtgggtcg atggaatggg aagcccgtct 600
    acaggtgact tccatgattt agtcaagtta tcgattcagg gaaatctcac cgccccacag 660
    tcgtgcaaaa ttaatcaggg cgatgttatt aaagttaatt ttggattcat caatggtcag 720
10 aagtttacca cccgcaatgc catgccagac ggttttactc cagtagactt tgatatcact 780
    tatgactgtg gtgatacttc aaagattaaa aactcgttgc aaatgcgcac cgacgggtaca 840
    actggggtag tagaccagta caacctggtc gccaggcgaa gaagttcaga caatgtgccc 900
    gatgtcggta ttcgtattga aaatctcggc ggccggagttg caaatattcc ttttcagaac 960
    ggtatccttc ccgttgatcc ttccgggcat ggaccgctca atatgcgcgc ctggccagtt 1020
15 aatctggtcg gtggtgagct ggaaacagga aaatttcagg gcacagccac cattaccgctc 1080
    atgggtcggg aa
    <212> Type : DNA
    <211> Length : 1092
```

```
15  ..SequenceName : SEQ ID 571
    SequenceDescription :
```

```
Sequence
-----
20  <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
    atgcaaaaaa acgctgcgca tacttatgcc atttocagct tgttggtgct ttcactaacc 60
    ggctgcgcct ggataccctc caccgcgcgt gtgcaggggg cgaccagtgc acaaccgggtt 120
    cccgggtcga cgcccgtcgc caacggttct attttccagt ctgctcagcc gattaactat 180
    ggctatcaac cgtggtttga agatcgtcga ccacgcaata ttggcgatac gctgaccatc 240
25  gtggttcagg agaacgtcag cgccagcaaa agctcctctg cgaatgccag ccgtgacggt 300
    aaaactaatt ttggctttga tactgtgccc cgctatttgc aggggctggt ttgtaacgct 360
    cgtgcgcatg tcgaagcctc cggtggtaac acgttcaacg gaaagggcgg ggccaatgcc 420
    agcaatacct ttacgggcac gttgacgggt acggttgacc aggtactggt caacggcaac 480
    ctgcatgtgg tgggtgaaaa acagattgcc attaatcagg gtaccgaatt tattcgcttc 540
30  tcgggcgtgg ttaatccacg cactatcagc ggacgcaata ccgtaccgtc tactcagggtg 600
    cgggatgcgc gtattgaata cgtaggcaat ggctacatta acgaagcgca aaatatgggc 660
    tgggtgcagc gtttcttctc taacctgtcg ccaatgtaa 699
    <212> Type : DNA
    <211> Length : 699
```

```
35  SequenceName : SEQ ID 572
    SequenceDescription :
```

```
Sequence
-----
40  <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
    atgaaacgac atctgaatac ctgctacagg ctggtatgga atcacattac gggcgctttc 60
    gtggttgccct ccgaactggc ccgcgcacag ggtaaacgtg gcggtgtggc gggtgcactg 120
    tctcttgccg cgtcacgtc actcccggtg ctggctgctg acatcgttgt gcaccggggt 180
45  gaaacagtga atggcggaac actggtaaac catgacaacc agtttgatc cggaacagct 240
    gatggcgtga ctgtcagtag cgggcttgag ctggggccgg acagtgcga aaacaccggc 300
    gggcaatgga taaaagcggg tggcacaggc ctgtcaccgc aaatggtcgt 360
    cagattgtgc aggcaggagg aactgccagt gatacggtta ttcgtgatgg cggagggcag 420
    agccttaacg gactggcggg gaacaccacg ctggataaca gaggtgagca gtgggtacac 480
50  gggggaggga aagctgccgg tacaattatt aaccaggatg gttaccagac cataaaacat 540
    ggcggactgg caaccggaac catcgtcaac accggtgcag aaggtggtcc ggagtctgaa 600
    aatgtgtcca gcggtcagat ggtcggaggg acggctgaat ccaccaccat caataaaaaat 660
    ggccggcagg ttatctggtc ttccgggatg gcacgggaca ccctcattta cgccggtggt 720
    gaccagacgg tacacggaga ggcacataac acccgactgg agggggggtaa ccagtatgta 780
55  cacaacgggt gcacggcaac agagacgctg ataaacgctg atggctggca ggtgattaag 840
    gaaggaggaa ctgccgcgca taccaccatc aaccagaaag aaagctgcag gtga 894
```

```
    <212> Type : DNA
    <211> Length : 894
60  SequenceName : SEQ ID 573
    SequenceDescription :
```

```
Sequence
-----
65  <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
    atgatgatga aaactattaa acatcttctg tgctgtgcc a ttgccgccag cgcattaatt 60
```

```
tccaccgggg tgcattgctgc gtccctggaaa gatgcgctct ccagcgccgc cagcgaactt 120
ggcaacccaaa acagcacgac acaggaaggc gggtggctgc tcgcgtcatt aactaacttg 180
cttagcagcg gaaaccaagc cttaagcgca gataacatga acaatgccgc aggcattctg 240
caatactgcg cgaagcaaaa gctggcttcg gtaaccgatg ccgaaaacat caagaaccag 300
5 gtgctggaaa agctgggctt gaacagtga gaggcaaaaag aagacaccaa ctatctggac 360
gggtattcagg gtttgcgtga aacaaaagat ggtcagcaac tcaatctgga taacatcgga 420
acgactccgc tggcagaaaa ggtgaaaacc aaagcctgcg atctgggtgtt aaagcagggg 480
ctgaacttca tttcctga
<212> Type : DNA
10 <211> Length : 498
    SequenceName : SEQ ID 574
    SequenceDescription :

Sequence
15 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
atgttttaag gacaaaaaac attggccgca ctggccgtat ctctgctgtt cacagcacct 60
gtttatgctg ctgatgaagg atccgggtgaa attcacttta aagggtgaagt tattgaagca 120
20 ccgtgtgaaa tacatcagga tgatattgat aaagagggtt aactcgggtca ggtgaccacc 180
agccacatta atcagtcaca tcacagcgat gccgttgctg tcgacctgct cttagtcaac 240
tgtgatctgg aaaactccag caacgggtcc ggtggcaaga tttctaaagt tgcagtccac 300
tttgatagct cagcgaatac caccggcgca gatccgattc tcaacaacac cagcaggggt 360
gaagccaccg gcgtggcggt acgtttaatg aataaagatc aaagcaatat cgttttaggc 420
25 accgctactc cagatatcga cctgggtccg acctccagcg aacaaacgct gaatttcttt 480
gctgggatgg aacaaattga tcaggctaca cctgtaacgc caggcgagat tacggcgaat 540
gcaacctacg tgctggatta taaataa 567
<212> Type : DNA
<211> Length : 567
30 SequenceName : SEQ ID 575
    SequenceDescription :

Sequence
35 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
atgagcgctg gaagcccaaa attcacctgt cgccgcattg cggttttctc actgggttctg 60
ctatggctgg caggctgttc tgacacttca aatccaccgg caccggtcag ctccgttaat 120
ggcaatgctg ctgcaatac taattctggt atgttgatta cgccgcccgc gaaaatgggg 180
40 acgacgtcta cagcgagca accgcaaatt cagccggtac agcagccaca aattcagggt 240
actcaacaac cgcaaatcca gccagtgcag ccagtagctc agcagccggt acagatggaa 300
aacggcagc cagcagagca agagattgtg atcaagcctg cacaataatt caccgttgc 360
agtacctata ccgtgaaaaa aggcgacaca cttttctata tcgcctggat tactggcaac 420
gatttccgtg acctgtctca gcgcaacaat attcaggcac catacgcgct gaacgttgg 480
45 cagaccttgc aggtgggtga tgcttccggt acgccaatca ctggcggaag tgccattacc 540
cagcccgacg cagcagagca agagattgtg atcaagcctg cacaataatt caccgttgc 600
gttgctgcgc aaccgacaat tacgtattct gagtcttcgg gtgaacagag tgctaacaaa 660
atgttgccga acaacaagcc aactgcgacc acgtgcacag cgctgtgaac ggtaccaaca 720
gcaagcaca cagagccgac tgctcagcag acatcaacca gtacgcctat ctccacctgg 780
50 cgctggccga ctgagggtcaa agtgatcga acctttggcg cttctgaggg gggcaacaag 840
gggattgata tcgcaggcag caaaggacag gcaattatcg cgaccgcaga tggccgcgtt 900
gtttatgctg gtaacgcgct gcgcgggtac ggtaattctg tatcatcaa acataatgat 960
gattacctga gtgcctacgc ccataacgac acaatgctgg tccgggaaca acaagaagt 1020
aaggcggggc aaaaaatagc aacctgggt agcaccgga ccagttcaac acgcttgc 1080
55 tttgaaattc gttacaagg gaaatccgta aaccgcgtgc gttatttggc gcagcgataa 1140

<212> Type : DNA
<211> Length : 1140
60 SequenceName : SEQ ID 576
    SequenceDescription :

Sequence
65 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
gtgattaaat ttctctctgc attaatctt ctactgggta cgacggcggc tcaggctgag 60
cgtattcgcg atctcaccag tgttcagggg gtaaggcaaa actcactgat tggctatggc 120
```

```

    ttggtagtggt ggctggatgg cactgggtgac cagacaaccc agacgccgtt taccacacaa      180
    acgcttaata acatgctctc acagctggga attaccgttc cgacgggcac caatatgcag      240
    ctaaaaaaacg tcgctgcggt aatgggtgaca gcgtcaacttc ctccgtttgg acgtcagggg      300
    caaaccatcg atgtgggtggt ttcttccatg ggtaatgccca aaagcttgcg tggaggtacg      360
5    ttgttgatga caccgcttaa gggcggtgac agtcaggtgt atgcgctggc gcagggcaat      420
    attctggttg gcggcgaggg agcctccgca ggcggtagca gtgttcagggt taaccaactg      480
    aacgggtggac ggatcaccaa tgggtgcggtt attgaacgtg aattgccag ccagtttggc      540
    gtcgggaata cccttaattt gcaacttaac gacgaagatt tcagcatggc gcagcaaatc      600
    gctgacacca tcaaccgcgt gcgtggatat ggcagcgcca ccgcgttaga tgcgcggact      660
10    attcaggtgc gcgtaccaag tggcaacagt tcccagggtc gtttccttgc cgatatccag      720
    aatatgcagg ttaatgtcac cccgcaggac gctaaagtag tgattaactc gcgcaccggt      780
    tcggtggtga tgaatcgca agtgaccctc gacagctgcg cggtagcgca gggaaatctc      840
    tcagtaacag ttaatcgta ggccaatgtc agccagccag atacaccgtt tgggtggtgga      900
    cagactgttg ttactccaca aacgcagatc gatttacgcc agagcggcgg ttcgctgcaa      960
15    agcgtagctt ccagcgccag cctcaataac gtggtgcgtg cgctcaatgc gctgggcgct      1020
    acgccgatgg atctgatgtc tattttgcaa tcaatgcaaa gtgcgggatg tctgcgggca      1080
    aaactggaaa tcacttga                                     1098
    <212> Type : DNA
    <211> Length : 1098
20    SequenceName : SEQ ID 577
    SequenceDescription :

Sequence
-----
25    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
    atgaaacggt caattattgc tgccgctgtc ttttcttctt tttttatgag cgctggagta      60
    tttgctgcag acgttgatac cggaacatta accattaaag gaaatattgc agaactctccg      120
    tgtaaatctg aagcgggtgg tgattcagta agtattaata tgccgactgt accaaccact      180
30    gtctttgaag gtaaagctaa atattctacc tatgatgatg cagtcggtgt aaccagcagc      240
    atgttaaaaa ttagctgccc gaaagaagtt gctgggtgtaa aactctcgtt gatcacaac      300
    gacaaaaata ccggtaacga taaggcgata gccagtagca acgataccgt aggtgataac      360
    agcgatgtcc tagatgtttc tgcacctttt aacattgaga gttataaaac agcggaaagg      420
    caatatgcta ttcggtttta agcaaaatac ctgaaactga cagataactc agtgcaatca      480
35    ggtgatgtgt tatcttctct ggttatgcgt gtggcgagg attaa      525
    <212> Type : DNA
    <211> Length : 525
    SequenceName : SEQ ID 578
    SequenceDescription :

40    Sequence
    -----
    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
45    atggcgggtt aaaagaatgt tatcaaaggg atactggcag gtacgtttgc gctaattgctg      60
    agcggttgtg tcaactgtgc ggacgccatt aaaggcagca gtaccacgcc gcaacaagat      120
    ttagttcggg tgatgagtg gcgcgactgt tacgttgggtc aggaggcacg ctttgggtggc      180
    aaagtgggtg cgttacaaaa ccagcaaggg aaaaccgcgc tggaaattgc taccgtaccg      240
    ctggacagcg gagctaggcc gacgctggga gaaccttctc gcggctcgcat ttatgccgat      300
50    gtgaacgggt ttctggacc gggtgatttc cgtggacaac tgggttacggt agtcgggcca      360
    atcacgggtg cggttgacgg caaaatcggc aatacgccct ataaatttat ggtgatgcaa      420
    gtaacgggtt acaaacggtt gcatttaacc cagcagggtg ttatgccgcc tcagccgatt      480
    gatccatggt tttatggcgg tcgtggctgg ccctatggct acggcggatg gggctggtat      540
    aatcccgccc ccgcgagagt acaaacagtt gtaaccgaat aa      582
55    <212> Type : DNA
    <211> Length : 582
    SequenceName : SEQ ID 579
    SequenceDescription :

60    Sequence
    -----
    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
65    atgagaaaca aaccttttta tcttctgtgc gcttttttgt ggctggcggt aagtcgcggt      60
    ttggtgcggg atagcacgat tactatccgc ggctatgtca gagataacgg ctgtagtggt      120
    gccgctgaat caaccaattt tactgttgat ctgatggaaa acgcgcgcaa gcaatttaac      180
    aacattggcg cgacgactcc tgtcgttcca tttcgtattt tgctgtcacc ctgtggtaat      240

```

```

gccgtttctg ccgtaaaagt tgggtttacc ggcgttgacg atagccacaa tgccaacctg 300
cttgcaactg aaaatacggg gtcagcgggt gcgggactgg gaatacagct tctgaatgag 360
cagcaaaaatc aaataccctt taatgctcca tcgtctgcga tttcgtggac gacctgacg 420
ccgggttaaac caatacgcgt gaatttttac gcccggttaa tggcgacaca ggtgcctgtc 480
5 actgcggggc atatcaatgc tacggctacc ttcactcttg aatatcagta a 531

<212> Type : DNA
<211> Length : 531
SequenceName : SEQ ID 580
10 SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
15 <400> PreSequenceString :
atgaaaaagt taacagtggc ggcttttgca gtaacaactc ttctttctgg cagtgccttt 60
gcgcatgaag caggcgaatt ttttatcggt gcaggttctg caaccgtacg tccaacagaa 120
ggtgctggtg gtacgttagg aagtctgggt ggattcagcg tgaccaataa cactcaactg 180
ggcttgacgt ttacttatat ggcgaccgac aacattgggtg tgggaattact ggcagcgacg 240
20 ccgttcgcgc ataaaatcgg caccggggcg accggcgata ttgcaaccgt tcaccatctg 300
ccgccaacac tgatggcgca gtggatattt ggatgaccca gcagcaaatt ccgtccttac 360
ggtggggcgg gtattaaacta caccaccttc ttgataatg gatttaacga tcatggcaaa 420
gaggcggggc tttccgatct cagtctgaaa gattcctggg gagctgccgg gcagggtggg 480
gttgattatc tgattaaccg tgactggttg gttaacatgt cagtgtggta catggatata 540
25 gataccaccg ccaattataa gctaggcggg gcacagcaac acgatagcgt acgctcgcgt 600
ccgtgggtgt ttatgttctc agcaggatat cgttttttaa 639

<212> Type : DNA
<211> Length : 639
SequenceName : SEQ ID 581
30 SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
35 <400> PreSequenceString :
ttgtttttta agcgaggaaa gattttgagt gcgggacgcc tgaataaaaa atctctgggt 60
atcgtgatgt ttttatcggt tggactgcta ttggcggggt gttcgggtag caaatcatcc 120
gatacaggaa cgtattccgg ctccgtttac accgtgaaac ggggggatac gctatatcgt 180
atttcgcgca cacggggaac cagcgtaaaa gagctggcgc gactgaacgg catttcccc 240
40 ccttacacca ttgaagttag tcagaaacta aaactgggtg gggcgaaaag tagcagtagt 300
acacgtaaat caaccgcaa atcaacgact aaaaccgcat cggttacacc gtcacacgag 360
gtacgaaat ctctctggcc gccagtaggg caacgttggt ggttatggcc aacgacagg 420
aaagtattca tgcctgattc gacagcagat ggcgggcaata aagggattga tatctcagct 480
ccacggggta cacctattta cgccgcgggt gcaggaaagg tgggtgatgt gggcaaccag 540
45 ctgcgtgggt acggtaatct catcatgatt aaacacagtg aagattacat tacggcttac 600
gcccataatg acacgatgct ggtaataaat gggcaaacg tgaaggctgg gcaaaaaatc 660
gcccatatgg ggagcacgga tgcggcatct gttcgcctgc atttccagat tcgttaccgt 720
gcaacggcaa ttgatccgct acgttacttg ccgcgcgagg gcagcaagcc aaaatgctga 780

<212> Type : DNA
<211> Length : 780
SequenceName : SEQ ID 582
SequenceDescription :

55 Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
atggcacaag tcattaatac caacagcctc tcgtgatca ctcaaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgcgcgggg tcaggcgatt gctaaccggt ttacttctaa cattaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg agctgacggt tcaggcttct 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgctctc 360
65 gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgag aatgacggcc agactatcac tattgatctg 480
aagaaaattg actctgatac gctggggctg aatgggttta atgtgaatgg tggcggggct 540

```

```
gtggctaata ctgctgcac taaagctgac ttggtagctg ctaatgcaac agtggctcggc 600
aacaaatata ctgtgagtg ggtttacgat gctgctaaag cgtctgattt gctggctgga 660
gttagtgatg gtgatactgt tcaggcaacc attaataacg gcttcggaac ggccgctagt 720
gcaacgaatt acaagtatga cagtgcgaag aagtcatact cttttgatac cacaacggct 780
5 tcagctgccc atgttcagaa atatttgacc ccgggagttg gtgataccgc taagggcact 840
attactatcg atggttctgc acaggatgtt cagatcagca gtgatggtaa aattacggca 900
agcaatggag ataaactcta cattgataca actgggcgct taacgaaaaa cggctctggg 960
gcttctttga ctgaggttag tctgtccaca cttgcagcca ataataccaa agcgacaacc 1020
attgacattg gcggtacctc tatctccttt accggtaata gtactacgcc ggacactatt 1080
10 acttaagatg taacagggtg aaaagttgat caggcagctt tcgataaagc tgtatcaacc 1140
tcgggaaaaa atgttgattt cactactgca ggttatagcg tcaacggcac aactggcgct 1200
gtaacaaaag gtgttgattc ggtttatgtt gataacaacg aggcgttgac cacatctgat 1260
actgtagatt tttacctaca ggatgatggt tcagtgacta acggcagcgg taaggcagtt 1320
tataaagatg atgtatggtaa attgacgaca gatgtgaaa caaaagcagc tacgacagcc 1380
15 gatccccctga aagctctgga tgaagccatc agtccatcgc aaaaattccg ctccctccctg 1440
gggtgcggtgc aaaaacggttt ggattccgca gtcaccaacc tgaacaacac cactaccaac 1500
ctgtctgaag cgcagtcgcc tattcaggac gccgactatg cgaccgaagt gtccaacatg 1560
tcgaaaagcg agattatcca gcaggccggt aactccgtgc tggcaaaaag caaccaggta 1620
ccgcagcagg tctgtctctc gctgcagggt taa 1653
20 <212> Type : DNA
    <211> Length : 1653
        SequenceName : SEQ ID 583
        SequenceDescription :

25 Sequence
-----
    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
30 atgaaaaaaa ttgcatgtct ttcagcactg gccgcagttc tggctttcac cgcaggtact 60
    tccgtagctg cgacttctac cgtaactggc ggttacgcac agagcgacgc tcagggccaa 120
    atgaacaaaa tgggcgggtt caacctgaaa taccgctatg aagaagacaa cagcccgctg 180
    ggtgtgatcg gttctttcac ttacaccgag aaaagccgta ctgcaagctc tggtgactac 240
    aacaaaaaac agtactacgg catcactgct ggtccggctt accgcattaa cgactgggca 300
    agcatctacg gtgtagtggg tgtgggttat ggtaaattcc agaccactga ataccgacc 360
35 tacaacacag acaccagcga ctacggtttc tcctacggtg ctggtctgca gttcaaccgg 420
    atggaaaaac ttgctctgga cttctcttac gagcagagcc gtattcgtag cgttgacgta 480
    ggcacctgga ttgccggtgt tggttaccgc ttctaa 516
    <212> Type : DNA
    <211> Length : 516
        SequenceName : SEQ ID 584
        SequenceDescription :

Sequence
-----
45 <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
    atgaagcgta atattatagg cgggtgcattc actctggcat ctctaattgt ggccgggcat 60
    gcactggcag aagatgggtg tgttaacttc gtcggtgaaa ttgtcgacac tacttgtgaa 120
    gttacctccg atacagccga tcaaattgtc ccactgggta aagtcagtaa aaatgcattt 180
50 tcaggtgtag gtagtctggc gtcgccacag aagttcagta ttaaaactga aaattgccc 240
    gcaacgtaca ctcaagcagc cgttcgtttt gatggtagag aagcgctggg cggcgacggc 300
    gacctgaaag tgggtacgcc gcttacagca ggcaaccctg gtgattttac cggtagagga 360
    caagcgattg cggcaaccgg cgttggattt cgtattttta accagtcgga taattcgcag 420
    gttaaaacttt ataacgactc tgcttatacc gctatcgatg ctgaaggcaa ggctgaaatg 480
55 aagttttattg cagcgtatgt ggcaaccaat gcgaccgtaa cggctggtag ggcgaaacgt 540
    gattcacaat ttactgtcga atataagaaa taa 573
    <212> Type : DNA
    <211> Length : 573
        SequenceName : SEQ ID 585
        SequenceDescription :

60 Sequence
-----
    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
65 atgaaaaaga gcactctggc attagtgggt atgggcattg tggcatctgc atctgtacag 60
    gctgcagaaa tatataataa agacggtaat aaactggatg tctatggcaa agttaaagcc 120
```



```

atgcattata tgagtataaa cgccagtaaa gatggcgacc agagttatat ccgttttggg 180
tttaaagggtg aaactcaaat taacgatcaa ctgactgggtt atgggtcgggtg ggaagcggag 240
tttgccgggaa ataaagcgga gagtataact gcacagcaaa aaacgcgtct cgcttttgcc 300
gggttgaaat ataaagattt gggttctttc gattatgggtc gtaacctggg cgcgttgat 360
5 gacgtggaag cctggaccga tatgttcccg gaatttgggtg gcgattccctc ggccagacc 420
gacaacttta tgaccaaacg cgccagcggg ctggcgacgt atcggaacac cgacttcttc 480
ggcgttatcg atggcctgaa cttaaccctg caatatcaag ggaaaaacga aaaccgcgac 540
gttaaaaagc aaacggcgga tggcttcggc acgtcattga catatgactt tggcggcagc 600
gatttcgcca ttagtggggc ctataccaac tcagatcgca ccaacgagca gaacctgcaa 660
10 agcgtggga caggcaagcg tgcagaagca tgggcaacag gtctgaaata cgatgccaat 720
aatatttatac tggcaacttt ctattctgaa acacgcaaaa tgacgccaat aactggcggc 780
tttgccaata agacacagaa ctttgaagcg gtcgctcaat accagtttga ctttggctcg 840
cgtccatcgc tgggttatgt cttatcgaaa gggaaagata ttgagggcat cggtgatgaa 900
tatctgggtca attatatcga-cgtcgggtgct aegttattt tcaacaaaaa tatgtcagcg 960
15 gttgttgatt ataaaatcaa ccaactggat agtgataata agctgaatat taataatgat 1020
gatactgtcg cggttgggat gacgtatcag ttttaa 1056
<212> Type : DNA
<211> Length : 1056
SequenceName : SEQ ID 586
20 SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
25 atgcgtaagc agtggctcgg gatctgcacg gcggcaggaa tgctcgcggc atgtacaagc 60
gatgatgggtc agcaacagac ggtaagtgtc ccgcagcctg cggtatgtaa cggccccata 120
gttgaaatta gcggggcgga ccgcggtttc gaacctactga acgcgacggc aaatcaggat 180
taccagcgcg acggttaaaag ctacaaaatc gtgcaggatc cgtctcgatt tagccaggcg 240
30 ggactggcgg caatctatga tgccgaacca ggagtaaac tgacggcctc tggcgaagct 300
ttcgatccga caaagctgac ggcgggccat ccaacgcttc cgatccccag ctacgccaga 360
atcactaacc tggctaaccg gcgaatgatc gtggtgcgca ttaatgatcg cggcccttac 420
ggcaacgacc gcgttatctc gctttctcgc gcggcagctg accgtcttaa cacgtcaaac 480
aacacaaagc ttcgtatcga tccgattatt gtcgcccagg atggttcgct ttctggctct 540
35 ggtatggctt gtaccacagt cgccaaacag acttacgccc tgccctgcacc tcccgattta 600
agcgggtggcg cgggaacaag ttcagtgtct ggcccgcagg gtgacattct tccggtcagt 660
aattcgacgc taaaaagcga agatccgacc ggccgcgcgg taaccagtag cggtttcctc 720
ggcgctccaa cgaccttagc gcctgggtga ctggaaggca gcgaaccgac gcctgcgcca 780
cagcccggtt ttacagcttc gtcgacaacg cctgcaacct cgctgcaat ggtgacaccg 840
40 caagccgcct cgcaaagcgc cagcggcaac tttatgggtc aagtcggggc cgtaagcgat 900
caggctcgtg cgcaacagta ccaacagcaa ctgggacaga agttcggcgt ccccggtcgc 960
gtaactcaaa atggcgcggt ctggcggatc cagcttggcc cattcgccag caaagccgaa 1020
gccagtacct tgacgaacg tttgcaaacg gaagcccaat tacagtcatt tattactacc 1080
gcgcgatag 1089
45 <212> Type : DNA
<211> Length : 1089
SequenceName : SEQ ID 587
SequenceDescription :

50 Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
atgaagaaaa aaacgatata tcagtgcggt attttgttct ttagccttct taacatccat 60
55 gtcgggatgg ctgggcctga acaagtcagt atgcatattt atgggaatgt ggtcgatcag 120
ggctgtgatg tcgccaccaa aagtgcatta caaaatattc atattggtga ttttaatatc 180
agtatttttc aggcgcgga taccgtaagc actgctgctg atttgaatat tgatatcacc 240
ggttgtgccc ctggtattac tggcgcgagc gtccttttta gcggcgaggc tgacaccctt 300
gcgcggacac tgcctcaaat aactgacaca ggcggaagcg gtggtatggc aacggggatt 360
60 gccgtgcaaa ttcttgatgc gcaaagtcag caagaaatcc cgctcaatca ggtccagcct 420
cttacgcctt taaaagccgg ggataacaca ctcaaatatc aacttcgtta taagtccaca 480
aaggcgggag caacggggcg taatgacgac gcggttctct attttgatct ggtttaccag 540
tga 543
<212> Type : DNA
65 <211> Length : 543
SequenceName : SEQ ID 588
SequenceDescription :

```

## Sequence

-----

5 <213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
atgaaaaaca aattgttatt tatgatgtta acaatactgg gtgcgcctgg gattgcagcc 60  
gcagcagggt atgatttagc taattcagaa tataacttcg cggtaaataga attgagtaag 120  
tcttcattta atcaggcagc cataattggt caggctggga ctaataatag tgctcagtta 180  
cggcagggag gctcaaaaact tttggcgggt gttgcgcaag aaggtagtag caatcgggca 240  
10 aagattgacc agacaggaga ttataacctt gcatatattg atcaggcggg cagtgccaac 300  
gatgccagta tttcgcaagg tgcttatggt aatactgcga tgattatcca gaaaggttct 360  
ggtaataaag caaatattac acagtatggt actcaaaaaa cggcagttgt agtgcagaga 420  
cagtcgcaaa tggcaattcg cgtgacacaa cgtaa 456  
<212> Type : DNA  
15 <211> Length : 456  
SequenceName : SEQ ID 589  
SequenceDescription :

## Sequence

-----

20 <213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
gtgatgaaat ttaaaaaatg tcttctgcct gtggcaatgt tagcgtcatt cactctggca 60  
ggatgccagt caaatgctga cgatcatgcc gcogatgttt atcaaaccga tcaactgaat 120  
25 accaaacaag aaactaaaac cgtaatatatt atttccattc ttcccgcaaa agttgccgta 180  
gacaaactcc aataaaacg gaacgcacaa gccttcggcg cgcttattgg cgcagtcgct 240  
ggcgggtgta tgcggccaaa cgtcggttct ggcagcaatt ccggaacgac ggcaggggca 300  
gttggcggcg gagctgtagg cgcggcagcg ggttctatgg tgaatgataa aaccttagtg 360  
gaaggtgttt cttaacata taagggaagg accaaagtgt atacctccac ccaggagggt 420  
30 aaagagtgcc agtttacgac aggtttagcc gttgttatta ccacaacgta taacgaaacg 480  
cgtattcagc caaataccaa atgtcctgaa aagagctaa 519  
<212> Type : DNA  
<211> Length : 519  
SequenceName : SEQ ID 590  
35 SequenceDescription :

## Sequence

-----

40 <213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
atgcaaacga aaaaaaatga aatttgggtg ggtatctttt tattagcagc actgctggcg 60  
gcgctgtttg tttgcctgaa ggcggcgaac gtgacgtcca tacgtactga atcgacctac 120  
acgctttatg cgacgttcga taacattggc ggcctgaaag cgcgctctcc ggtcagcatt 180  
ggtggtgttg ttgtgggccc ggtggcggat attacgctgg acccgaaaac ctatctgccg 240  
45 cgcgtaacgc tggaaattga acaacgttat aaccacattc ctgataccag ttcgctgagc 300  
attcgtactt cggcctgct gggagaacaa tatctggcat taaacgtcgg ttttgaagac 360  
ccggaactgg ccgaatgctat cctgaaggat ggcgatacaa ttcaggacac caagtctgcg 420  
atggtgctgg aagatctcat tggtcagttc ctttacggtg gtaaaaggcg tgacaataag 480  
aatagtgccg atgcgccagc tgctgcgcca ggtaataatg aaaccactga acctgtgggt 540  
50 acaacgaaat aa 552  
<212> Type : DNA  
<211> Length : 552  
SequenceName : SEQ ID 591  
SequenceDescription :

## Sequence

-----

60 <213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
atggcaccgt tagccttttc tgcacaatca ttggctgaat cattaacggt ggaacaacgc 60  
cttgagttat tagaaaaagc gttaagagaa acgcaaagcg aactcaaaaa gtataaagat 120  
gaagagaaga aaaaatatac gccagcgagc gtgaatcgta gcgtaagtac gaatgatcaa 180  
gggtatgccg ccaatccgtt cccgaccagt agtgccgcaa aacctgatgc tgtactggtc 240  
aaaaatgaag agaaaaatgc cagtgaagaa ggctcgattt attcttccat gactctgaaa 300  
65 gatcttcagta agtttgtgaa agatgaaatt ggcttttagt acaacggcta ttaccgttct 360  
ggttggggga ccgcctctca tggttcacct aaatcatggg cgattgggtc tctgggcccgc 420  
tttggtaacg aatactccgg ctggtttgat ttgcagttaa aacaacgtgt ctacaacgaa 480

```

aacggcaaac ggggtgatgc cgttgatgat atagatggta acgttgggtca gcagtactct 540
accggctggg ttggcgataa tgcgggtggc gagaacttta tgcagttctc cgatatgtac 600
gttaccacca aagggtttcct gccctttgcy ccagaggctg atttctgggt gggtaaaccac 660
gggtgcgccga aaattgaaat ccagatgctg gactggaaaa cgcagcgtac tgatgctgca 720
5 gcggtgtgtag gtctggaaaa ctggaaaagtc ggtccgggta aaattgatat cgcgctgggt 780
cgcggaagatg tcgatgatta cgatcgcagc ctgcaaaaca aacagcagat taatacccat 840
actattgatt tacgctataa agatatcccg ttatgggata aagcgacctt aatggtgagt 900
ggctggttatg tcacggcaaa cgaaagcgca tcggaaaaag ataatacagga taataacggg 960
tattatgact ggaaagatac ctggatgttc ggacacatct taacgcagaa atttgataaa 1020
10 ggtggcttca acgaattctc ctctctgggt gcgaataact ctatcgccag gaactttggc 1080
cgttatgctg gcgcaagtc atttaccacc tttaatgggt gttattatgg tgatcacacc 1140
ggcggaacag cagttcgtct gacctcgcag ggcgaaagct atatcggcga tcattttatt 1200
gtgggtaacg cgattgttta ctctctcggt aacaatattt atagctacga aacaggcgca 1260
cactctgatt tgcgaatctat tcgtgcgggt gttcgccgg cctatatatt ggaccaatat 1320
15 aaccagacag gtgttgaact gggctatttc acccagcaaa acaaagatgc gaatagtaat 1380
aaatttaagt agtctggtta taaaaccacg ctcttcata cctttaagt caataccagt 1440
atgttgacct cgcgtctgga aattcgtttc tacgccagc atatacaagc cctggaaaac 1500
gaactggatg gcttcacctt cgaagacaat aaagacgccc agtttgctgt cgggtgccag 1560
gctgaaatct ggtggtaa 1578
20 <212> Type : DNA
    <211> Length : 1578
        SequenceName : SEQ ID 592
        SequenceDescription :

25 Sequence
-----
<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
30 atgaaaaaaaa gaattttatc agcagtttta gtgagtgggt taactcttag ttctgcgaca 60
acattatcag ctgtaaaagc tgatgacttt gatgcgcaga ttgcgtcaca agattctaaa 120
atcaacaact tgaccgcaqa acagcaagca gcacaagcac aagttaatac gattcaagga 180
caagtaagtg ctttcagacac acaacaagct gaattacaag ctgaaaatca aagacttgaa 240
gctcagtcgt ctactttggg tcaacaaatt caaacacttt caagcaaaat tggtgcacgt 300
aatgaatctt tgaagcaaca agctcgtagt gctcaaaaaa gtaacgcagc taccagctat 360
35 ataatgcta tcattaattc aaaatcagtt tctgatgcta ttaatcgtgt ttcggctatt 420
cgtgaagttg tatctgctaa tgaaaaaatg cttcaacaac aagagcaaga taaagcagct 480
gttgagcaaa agcaacaaga aaatcaagca gcaattataa ctggttcgagc taatcaggag 540
acaattgctc aaaatacaaa tgcttttaaa acacagcaag ctcaattaga agcagcaca 600
ctaaacttgc aagctgaatt gactactgca caagatcaaa aagctacttt agttgctcaa 660
40 aaagcggcag cagaggaagc tgcacgcaa gcagcagcag cacaagcggc agcagaagct 720
aaggccgcag cagaagcgaa agctttacaa gaacaagcag cgaagcaca agcagcagca 780
aataataata ctcaagctac agatgtttct gaccaacaag cagcggcagc tgataacact 840
caagcagcac aaacaggtga ttcaactgag cagtcagcag cacaagcagt aaataattct 900
gatcaagaaa gtactacagc aacagaagca caaccatcag cttctagtgc ttcgacagct 960
45 gctgtagcag ctaatacttc ttctgcta atacatccag cagggcaatg tacttgggg 1020
gttaaatcat tagctccttg ggtaggaaac tactggggta atggtggaca atgggcagca 1080
agtgcagcag cggcaggata tagagttggt tctcacctt cagctggagc tgtagctgta 1140
tggaatgatg gcggttatgg acacgttgct tatgttacag gtgttcaagg tggccaaatt 1200
caagttcaag aagctaacta tgcaggtaac caatctattg gtaactaccg tggttggttt 1260
50 aatccaggtg gtgtaagcta tatctatcca aactaa 1296
<212> Type : DNA
    <211> Length : 1296
        SequenceName : SEQ ID 593
        SequenceDescription :

55 Sequence
-----
<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
60 atgaaagtca aaaaaactta cggttttcgt aaaagtaaaa ttagtaaaac actgtgtggt 60
gctgttctag gaacagtagc agcagtcctc gtagcaggac aaaagggttt tgccgatgaa 120
acgaccacta ctagtgtatg agatactaaa gtagttggaa cacaaactgg aaatccagcg 180
accaatttgc cagaggctca agggagtgcy agtaagggaag ctgaacaaag tcaaaaccaa 240
gctggagaga caaatggttc aataaccagt gaagtaccta aaactgatct tgatcaagca 300
65 gcaaaagatg ctaagtctgc tgggtgtcaat gttgtccaag atgccgatgt taataaagga 360
actgttaaaa cagctgaaga agcagtccaa aaagaaactg aaattaaaga agattacaca 420
aaacaagctg aggatattaa gaagacaaca gatcaatata aatcggtatg agctgctcat 480

```

	gaggcagaag	ttgctaaaat	caaagctaaa	aatcaggcaa	ctaaagaaca	gtatgaaaaa	540
	gatatggcag	ctcataaaagc	cgagggttgaa	cgcatataatg	ctgcaaatagc	tgccagtaaa	600
	acagcttatg	aagctaaatt	ggctcaatat	caagcagatt	tagcagccgt	tcaaaaaacc	660
	aatgctgcc	atcaagcagc	ctatcaaaaa	gcccttgctg	cttatcaggc	tgaactgaaa	720
5	cgtgttcagg	aagctaatagc	agccgccaaa	gccgcttatg	atactgctgt	agcagcaaat	780
	aatgctaaaa	atacagaaat	tgccgctgcc	aatgaagaaa	ttagaaaacg	caatgcaacg	840
	gccaaagctg	aatatgagac	taagttagct	caatatcaag	ctgaactaaa	gcgtgttcag	900
	gaagctaattg	ccgcaaacga	agcagactat	caagctaaat	tgaccgccta	tcaaacagag	960
	cttgctcgcg	ttcaaaaaagc	caatgccgat	gctaaagcgg	cctatgaagc	agctgtagca	1020
10	gcaaatatg	ccaaaaatgc	ggcactcaca	gctgaaaata	ctgcaattaa	gcaacgcaat	1080
	gagaatgcta	agggcgactta	tgaagctgca	ctcaagcaat	atgaggccga	tttggcagcg	1140
	gtgaaaaaag	ctaattgccgc	aaacgaagca	gactatcaag	ctaaattgac	cgccatcaaa	1200
	acagagctcg	ctcgcggttca	aaaagccaat	gcggatgcta	aagcggccta	tgaagcagct	1260
	gtagcagcaa	ataatgcgcg	aaatgcagcg	ctcagagctg	aaaataactgc	aattaaaaag	1320
15	cgcaatgcgg	atgctaaaagc	tgattacgaa	gcaaaacttg	ctaagtatca	agcagatcct	1380
	gccaaatatc	aaaaagattt	agcagactat	ccagtttaagt	ttaaaggcata	cgaagatgaa	1440
	caagctttcta	ttaaagctgc	actggcagag	cttgaaaaac	ataaaaaatga	agacggaaac	1500
	ttacacagaac	ccataatgc	aaatttggtc	tatgactctt	agccaaatgc	gaactttatct	1560
20	ttgacaacag	atgggaagtt	ccttaaggct	tctgctgtgg	atgatgcttt	tagcaaaagc	1620
	acttcaaaag	caaaatatga	ccaaaaaatt	cttcaattag	atgatctaga	tatcactaac	1680
	ttagaacaat	ctaattgatgt	tgcttcttct	atggagcttt	atgggaattt	tggtgataaa	1740
	gctggctgaat	caacgcagct	aagcaataac	tcacaggtta	aatggggatc	ggtactttta	1800
	gagcgcggtc	aaagcgcaac	agctacatac	actaacctgc	agaattctta	ttacaatggt	1860
	aaaaagattt	ctaaaattgt	ctacaagtat	acagtggaac	ctaagtccaa	gtttcaaggt	1920
25	caaaaggttt	ggtttaggtat	ttttaccgat	ccaactttag	gtgtttttgc	ttccgcttat	1980
	acaggtcaag	ttgaaaaaaa	cacttctatt	ttatttaaaa	atgaattcac	tttctatgac	2040
	gaagatggaa	aaccaattaa	ttttgataat	gcccttctat	cagtactctc	tcttaaccgt	2100
	gaaaaataatt	ctattgagat	ggccaaagat	tatacgggta	aatttgcata	aatctctgga	2160
	tcactctatg	gtgaaaagaa	tgccatgatt	tatgctacag	atactctcaa	ctttaggcag	2220
30	ggtaaggtg	gtgctcggtg	gacctgtat	accagagcta	gcgaaccggg	atctggctgg	2280
	gtagtctcag	atgcgcctaa	ctcttggtat	ggtgctgggtg	ctatccgcac	gtctggctct	2340
	aataacagtg	tgacttttggg	tgctatctca	tcaacacttg	ttgtgctgc	tgatcctaca	2400
	atggcaattg	aaactggcaa	aaaaccaaat	atttggtatt	ctttaaatgg	taaaaatcgt	2460
	gcggttaagt	ttcctaaggt	taccaaggaa	aaacccacac	cgccgggtta	accaacagct	2520
35	ccaactaaac	caacttatga	aacagaaaag	ccattaaaaac	cgccaccagt	agctcccaat	2580
	tatgaaaagg	agccaacacc	gccgacaagg	acaccggatc	aagcagagcc	aaacaaaccc	2640
	acaccgccga	cctatgaaac	agaaaagccg	ttggagccag	cacctgttga	gccaagctat	2700
	gaagcaggtg	caacaccgcc	gacaaggaca	ccgagtcagg	cagagccaaa	taaaaccaca	2760
	ccgccgacct	atgaaacaga	aaagccgttg	gagccagcac	ctggttgagcc	aagctatgaa	2820
40	gcagagccaa	cgccaccgac	accaacacca	gatcaaccag	aaccaaaaca	acctgttgag	2880
	ccaacttatg	aggttattcc	aacaccgcgc	actgatcctg	tttatcaaga	tcttccaaca	2940
	cctccatctg	ttcccaactgt	tcatttccat	taacttaaac	tagctgttca	gccgcagggt	3000
	aacaaagaaa	ttagaacaaa	taacgatatt	aatattgaca	gaactttggt	ggctaaacaa	3060
	tctgttggtta	agtctccagct	gaagacagca	gatctccctg	ctggacgtga	tgaacaaact	3120
45	tcctttgtct	tggttagatcc	cctgccatct	ggttatcaat	ttaatcctga	agctacaaaa	3180
	gctgcaagcc	ctggctttga	tgctacttat	tgctatgcaa	ctaatacagt	caccttcaag	3240
	gcaactgcag	caactttggc	taogtttaat	gctgatttga	ctaagtcagt	ggcaacgatt	3300
	tatccaacag	tggtcggaca	agttcttaat	gatggcgcaa	cttataagaa	taatttcacg	3360
	ctcacagtca	atgatgctta	tggcattaaa	tccaatggtg	ttcgggtgac	aactcctggt	3420
50	aaaccaaatg	atccagataa	tccaaataat	aattatatta	aaccaactaa	ggttaataaa	3480
	aacgaaaatg	gcgttggtat	tgatggtaaa	acagttcttg	ccggttcaac	gaattattat	3540
	gagctaactt	gggatttgga	tcaatataaa	aacgaccgct	cttcagcaga	taccattcaa	3600
	aaaggatttt	actatgtaga	tgattatcca	gaagaagcgc	ttgaattgag	tcaggattta	3660
	gtgaagatta	cagatgctaa	tggttaatgaa	gttactgggtg	ttagtgtgga	taattatact	3720
55	aatcttgaag	cagccctcca	agaaattaga	gatgttcttt	ctaaggcagg	aattagacct	3780
	aaaggtgctt	tccaaatttt	ccgtgccgat	aatccaagag	aattttatga	tacttatgtc	3840
	aaaactggaa	ttgatttgaa	gattgtatca	ccaatgggtg	ttaaaaaaca	aatgggacaa	3900
	acaggcgggc	gttatgaaaa	tcaagcttac	caaattgact	ttggtaattg	ttatgcatca	3960
	aatatcatta	tcaataatgt	tcctaagatt	aaccctaaga	aagatgtgac	cttaacactt	4020
60	gatccggctg	atacaataaa	tggtgatggt	cagactattc	cacttaatac	agtctttaat	4080
	taccggttga	ttggtggcat	tatccctgca	gatcactcag	aagaactcct	tgaatacaat	4140
	ttttatgatg	attatgatca	aacaggagat	cactatactg	gtcagtataa	agtttttgct	4200
	aaggttgata	tcacttttaa	agacgggtct	attatcaagt	caggtgctga	gttaactcag	4260
	tatacgacag	cggaagttag	taccgctaaa	ggtgctatca	caattaagtt	caaggaagcc	4320
65	tttctgcggt	ctggttcaat	tgattcagcc	ttccaagctg	aaagttatat	ccaaatgaaa	4380
	cgtattgcgg	ttggtaacttt	tgaaaatact	tattataata	ctgtcaatgg	ggtaacttac	4440
	agttcaaaata	cagtgaaaaac	aactactcct	gaggatccta	cagaccctac	tgatccgcaa	4500

gatccatcat caccgcgaggac ttcaactgta attaactaca aacctcaatc aactgcttat 4560  
caaccagct ctgttcaaga aacattacca aatacgggag taacaaacaa tgcttatatg 4620  
cctttacttg gtattattgg ctttagttact agttttagtt tgcttggttt aaaggctaag 4680  
aaagattga 4689

5 <212> Type : DNA  
<211> Length : 4689  
SequenceName : SEQ ID 594  
SequenceDescription :

10 Sequence  
-----  
<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :

15 atgttaacgg aattaaaagc ggttttaaaa aagcctatgc tttggattac gatggttagga 60  
gtagcccttg tcctgcccct atataatatt atttttttga gttctatgtg ggatccttat 120  
ggcaaagtat ctgattttacc tgttgcagtt gtttaataaag ataaaacggc aacttatgaa 180  
ggaaagaaga tgactatcgg taaagatatg actgataata tgggtccgtaa taaaagtttg 240  
gactatcatt ttgttgatag cgaaaaagct caaaagggagc ttgaaaaagg tgattactat 300  
gatgattatta ctttaccaga agatctttct caaaatgcgg ctagtgtttt aacagatgaa 360  
20 cctaaaaagc taacgattcc ttaccaaacy tctaaaggac atagttttgt tgcctccaaa 420  
atgagtgaat ctgctgctaa gacttttaaaa gagtctgtgt cgaaaaacat tacaagttct 480  
tacaccaaat cacttttttaa gaatatgtca accctaaaaa caggctcttg cagtgcggct 540  
aatgcaagtc aaaaaatagc gactgggttca aaacagttag caaatggcag tcaagtgatg 600  
actgataatc tgaattttact ttcaaattca agtcaatcat ttgctcaagg gactaatacc 660  
25 ttatatctcg gcttaacagc ttatacggga ggtgtcggtc agctttctgc aggttttaaat 720  
aatttaaaac atggttttgac agcttataca aatggagttg tgcagttagc aaatggcagc 780  
agccaactga gcaatcaatc tcagaagctt ctaggaggtg ttgcgcaatt agcgaatggg 840  
tctgcttcta ttcaacaatt ggttaatgct agcagtcagt tgaatcaagg acttattaa 900  
ctgtcaacag caacaggtct ttctgaagaa caagtccaac agtttagctc attgattaat 960  
30 cagttgggaa cactgtttga aagtattcaa aattacagtg ataattgggac agcaacgact 1020  
gcaaatagtc ctgattcttag tacgtattta tctgccatta caacagcagc tcaagcaatt 1080  
gttaattcag gaaatacgtc tcagcaaaaca acaactaatc agtccaatgc attggctgca 1140  
gtccaagcta cagggtgctta tcaaagatta tccgtgagg atcaatcaga gatcgtctga 1200  
35 gctttggcca acactgttag ttcaacaaca actacaggtg ctgatgcaaa cgcagtgta 1260  
caagcccaag ctatcctaaa caatgtccaa agtattcaaa gtgccttatc tactttacag 1320  
acaacaactg ctaatacacc aacaagcca tcagccagct tgactcaaat taaaaataca 1380  
gctaattctg tattacctag tgcggcaact tccttgacaa ccttgtaag tggtttgaca 1440  
caagcaaaaa cagctcttga ttgcgaagta gtccctgtca gcacagccct tgctaattgg 1500  
acggctcaat taggtctctac tttttcaaca ggcgccaatt ccttgatgac aggagtaggc 1560  
40 caatacacta atgcagttga tattcttaat gcaggagcta atactttggc tgctaaaaat 1620  
aaccagttaa cagatgggtac aagtcaattg gtaaatgggt ccaatcaatt aaatagcaac 1680  
tctggacaat taacgaagg gactgcacag tttagcaaatg gtgctaataa aatagagaca 1740  
ggagctggca aattggctgc aggtggagaa agtttaacgg cgggcttgac aactttgtca 1800  
agtggttagtg gtgaactgtc gaaagcattg tcaactgcta aaaataaatt atcattagta 1860  
45 gcagttgaca atgataatgc taagactttg tcaagtcctg tcaactatca gcatacagat 1920  
aaagataatg tcaaaacaaa tgggtgttga atggctcctt atatgatgtc agcagcttta 1980  
atggtaatgg caatttcaac caatactatc tttagagtag cactttcttg taagcaagct 2040  
aaaaccctac gagaatggat agatcaaaaag ttagcagtc atggcttgat tgctgttact 2100  
ggagctatta ttctctatct tgggtgttcat attattgggt tatcagctaa ttttgaacta 2160  
50 aaaactttag gattaattat tcttaccagt atcaacttta tggctttagt gacaactttg 2220  
gtaactttgg atgataaatt tggctctttt gctgccttaa ttttactttt actacaatta 2280  
ggttccagtg caggaaacct tcccttagcc gttacagata agtttttcca agttgtcaat 2340  
ccttatttac caatgagtta ttccggtttct ggtttacgag aaaccatttc tatggctggg 2400  
acaattggta atcaactact agcgtctgag ttatttttcc ttacttttgc tgcttttagga 2460  
55 ttgttaatcg ctgaaggag gattaggtct gtcaaatag cctaa 2505

<212> Type : DNA  
<211> Length : 2505  
SequenceName : SEQ ID 595  
SequenceDescription :

60 Sequence  
-----  
<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :

65 atgggtatccc aaaaaaataa atctaaaaag ggtcaatcta aaacggttac cttaatttca 60  
aatagaatta atctcctatt ttttttgatt gtcgctttgt ttactgtttt gcttttgagg 120  
ttagctcaga tgcaagcttta tgatgcaaa gttttacaaat ctaaatggac agagtcaaca 180

	acatatata	taaaaacctc	cagccctcgc	ggacaaaattt	atgacgctaa	aggggtggct	240
	ttagttgaaa	acgagggttaa	agaggttgtt	gcctttacaa	gaagcaatac	catgactgcc	300
	aaggatatta	aagcaaatgc	aaaaaagtta	gcagatatgg	tgactttaac	tgaatctaag	360
	gtaaccacaa	gtcagaaaaa	agattactat	ctggcagatc	caaaaaatta	tcaaaaaatc	420
5	gttaaaaaat	taccaataaa	taaaaatat	gataactttg	gaaataacct	aacggaatcg	480
	aagatctatg	caaatgctgt	taaagcagtt	ccaaacagtg	ctattgatta	ttctgaagat	540
	gagaaaaaaa	tcattcatat	tttcagccag	atgaatgcaa	cctctgtttt	taatacagct	600
	tcgttaacaa	caggagatttt	aacagctgag	caatttgcag	tattggctac	aagcaaatca	660
	gatttaagg	gaattttctgt	taagactgac	tgggaacgta	aaacagataa	aaattccatt	720
10	acttctatta	tcggtaaaagt	ttccagtcac	aaaaccggtc	tgctgtctga	agaagccaat	780
	aactatgtta	aaaaagggtta	ttctctgaat	gaccgcgttg	gaacatctta	tcttgaagag	840
	caatatgaaa	acgattttgca	aggtagtcgt	actgttcaag	caatcaagg	taacaaagaa	900
	ggtaaaaata	tcagtataaa	gaccactgcc	aaagggacta	aaggaaaaaa	tctgaagttg	960
	acccttgatc	tgaattttca	aaaaggtggt	gaacaaattc	ttaaccaata	ttttaattct	1020
15	gaattagcat	ctggaaatac	caagtattct	gaaggcgttt	atgctgttgt	tcttaaccctg	1080
	aacacaggtg	cagttctttc	tatggctggt	ttggaacacg	accttaaaac	gggcgaagta	1140
	tcttctaagt	ctcttgagac	ggttactgaa	gtctttactc	cgggttccgt	tggttaaagga	1200
	gcgactttga	cagctgggttg	ggaaaacggt	gtctttatcag	gcaatcaagt	actcaatgac	1260
	cagcctattc	aatttgcggg	ttcaagccct	attaactctt	ggtttaccac	tggatcaact	1320
20	cctcttacag	caagtcaatc	cttagagtat	tcttctaata	cttatatggt	tcaattggct	1380
	ttaaaaataa	tggaacaaga	ttatcatagt	ggtatgacct	tatcaacaga	tggctataag	1440
	gaagctatgg	agaaattaa	agctacttat	gctcaatatg	gtttgggtgt	ctcaacagga	1500
	attgaccttc	cgggagagtc	aaagggctat	acgccagaa	attatgatcc	ttctaagtgt	1560
	ttaacagaat	catttgggca	gtttgataac	tatcagcgta	tgacagctgc	acaatatgct	1620
25	gcagctgtcg	caaatgggtg	taaacgtatt	gtccccatt	tggttgaagg	tatctatgat	1680
	aataattaaa	agcgcggttt	aggaaatctt	gttcaatcta	ttgacacca	ggttttaaat	1740
	aatgtttcta	tctctagcga	tgacatgggg	attatcaagg	aagggtttcta	taatgttgtt	1800
	aacggtggta	gttatgcaac	aggggaagact	cttgcaaaag	gggcaagtgt	tcccatctcg	1860
	gcaaaaacag	ggacagccga	agcttacgtg	acaggagatg	atggtaaatc	tggtttataca	1920
30	tccaatttaa	acgttgtttg	ttatgcacca	agcagcaatc	ctcaaatg	tgtagctgtt	1980
	gtcttgccac	atgagacaga	ccttcatgga	accactagtc	atgctattac	gagagatatc	2040
	atcaatcttt	atcaaaagat	gtatccaatg	aatcagtg			2079

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2079

35      SequenceName : SEQ ID 596  
          SequenceDescription :

Sequence

-----

40	<213> OrganismName : Streptococcus mutans UA159	
	<400> PreSequenceString :	
	atgacagttc taaaatatgg actaggattt ctcttaagcg ctattatttt agccattata	60
	attggagggtc ttctgtttac ctattatgtc agcagtactc ctaaaactatc agaagctaaa	120
	cttaaaagcta ctaattctag tttggtttat gatagcaata ataactctgat tgctgattta	180
45	gggtgctgaaa agcgcgaaaag tatttcttca gacagtattc caatgaagtt agtaaatgcc	240
	gtttactctta ttgaagatca cgtttctttt aaacatcgtg gtgtcgacat ttatcgtatt	300
	attgggtgcag cttggagtaa ttacttctat aaatcaactc aagggggatc cactcttgat	360
	cagcagctta tcaagctggc ctatttctct actaaagagt ctgatcagac cttaaaacgt	420
	aaagctcaag aagtttggct gtctctacaa atggagaaaa aatacacgaa agaagagatt	480
50	ctaacttttt atgtcaataa gggtttacatg ggtaaatggga attacggaat gcgcactgct	540
	gcaaagtctt attatggcaa ggatcttaaa gacttatcaa ttgcccagct agcgacactc	600
	gcaggtattc cgcaagcacc gacacaatat gatccttacg ctacagccaa ggcagctaca	660
	agcagacgta ataccgtttt gtcacagatg tataaacata aaaaaattac aaaacgagaa	720
	tatgatgctg cagttagcaac accaatttct gatggcctgc aagaactgaa acgtctctct	780
55	agttatccaa aatatatgga taattatctg aaacagggtt tttcagaggt gaaaaaacgt	840
	actggtcaag atactctttc agcaggcatg aaggtttata caaatgttaa tgccgatgca	900
	cagcaatatc tctggaacat ttataatata gatgaatata ttgcttatcc tgatgataat	960
	ttccaagttg cttctactgt tatggatgtt aaatgggtt aagttattgc acagcttggc	1020
	ggacgccatc aagataccaa tgtttctttt ggtaccaatc aggtgtgtctt aactgatcgt	1080
60	gactggggat caaccatgaa acctatttca gcatatggcc ctgctcttga aagcgaagct	1140
	tttacgaca ctgcacagat gctaaatgac tcggtctatt attatccagg tacaacaaca	1200
	caagtctatg actgggatca tcgttataat ggttggatga ctatccaaac ggctatccaa	1260
	caatctcgta atgtccctgc tgtcagagct attgatgcgc ctggattaga tactgccaaa	1320
	ggtttcttaa gcggtctcgg tattgattat cctgagatgc gttattcaaa cgccatttca	1380
65	agtaatacaa gtagttcaga acaaaagtat ggtgccagca gtgaaaaaat ggccgcgcgt	1440
	tatgtgctctt ttcttaattg ttggaaccac aatacgtcaa taaaatagaa	1500
	tttaaggatg gaacatcaga gacctatgat gctaaaggca atcgtgcgat gaaagaaacg	1560

```

5   acagcctaca tgatgacaga tatgttaaaa acagtattaa catatggtag tgggtactgag 1620
    gctgctattc ctgggtcttta tcaagcaggt .aaaacaggaa catccaacta tgatgacaat 1680
    gaattggtag agatgtctga aaaacttggg attaatcctt atggacttgg tactattgct 1740
    ccagatgaaa accttggttgg ttatacacct cagtattcaa tggctgtttg gacaggatat 1800
10  aaaaaatcgct taatgcctgt ttacggagac agtatgaaaa ttgctgcgca agtctatcgt 1860
    actatgatgg cttatctttc tagctcaggt aattctgatt ggaccatgcc tgacggtctc 1920
    tatcgacgcy gtgggttatct ttacctaaat ggttcaagtg ggtcaaatag taggtatggt 1980
    gcagctcctg caacttcacg gtcattctct tcatcatctt cttctgattc aaacaataac 2040
    gatcaaaata ataatacaac tacagaagcg tctagttagt catcttcacg aagttctgat 2100
15  gctacgacat cttctaatac ataa 2124

```

<212> Type : DNA

<211> Length : 2124

SequenceName : SEQ ID 597

SequenceDescription :

15

Sequence

-----

<213> OrganismName : Streptococcus mutans UA159

<400> PreSequenceString :

```

20  atgaaaatcga aaactgctaa aattactttg ctaagcagcc ttgctttggc ggcttttggg 60
    gcaacgaatg tttttgcaga tgaagcatca actcaattaa attctgatac tgttgacgca 120
    cctactgctg atacacaagc atcagaaccg gctgcaacag aaaaagaaca gtctcctggt 180
    gtagctgttg tcgaaagtca cacacaagga aatacaacaa cgacaacatc tcaagttact 240
    tctaaagaat tgggaagatg taaggctaat gctaactcagg aagggtttaga agtcactgaa 300
25  actgaagctc aaaaacagcc ttcggttagaa gctgcagatg cagataacaa agcacaggca 360
    caaacaatta atacagcggg agctgattat caaaaggcaa aagctgaatt tcctcaaaaa 420
    caagaacaat ataataaaga ttttgaaaag tatcagtctg atgtcaagga gtatgaagct 480
    caaaaggcag cttacgagca atataaaaaa gaagtgcac aagggtttggc atctgggcgt 540
    gttgaaaaag cccaaggact tgtgttttatt aatgaacctg aggcataaact ttctattgag 600
30  ggtgttaatc agtacctaac aaaagaagca cgtcaaaaac atgcaactga agatattctt 660
    cagcaatata atactgataa ttatacagct tctgatttta cccaagcaaa tccatattgat 720
    ccaaaaggag atacttgggt caaaatgaaa gtgggagatc agatttcagt tacctacgat 780
    aatatcgtta attcaaaata taatgataaa aagattagta aggtaaagat taattatact 840
    ctcaatagtt caacgaataa tgaaggcagt gcactgggtc atttgttcca tgatccaact 900
35  aagacaattt tcattgggtg acagacatct aatgctggca gaaatgataa aatcagtggtg 960
    acgatggcaa ttatttttta tgatgaaaaa ggcatgaaa tcgatttaag cggcaataat 1020
    gccattatga gtctctcatc gttaaaccat tggacgacta agtatggcga tcatgtggaa 1080
    aaagttaaacc ttgggggataa tgaattcgtt aaaataccgg gctcatctgt tgacttacat 1140
    ggcaatgaaa tctattcggc taaggacaac caatataaag ctaatgggtg aacctttaat 1200
40  ggtgatggag cagattggct ggatgctgtc aatgtgatg gaacgccacg tgctgacgac 1260
    gcttatttat gtgcaggtgc tatgacttac aaggggagaa ccttcacctt tactgttggt 1320
    ggtaatgatc aaaacttacc aacaaccatt tgggttgcca ctaattcagc tgtagctgtg 1380
    cctaaagatc cgggagctaa accaacaccg ccagaaaaac cagagttgaa aaaacctact 1440
    gtgacttggc ataaaaatct tgttggtgaa actaaaactg aggaagttcc tccagtgaac 1500
45  ccaccaacaa ctctctgatg accaacgcca gaaaagccaa aaacaccaga ggatcctcaa 1560
    tcacctgtcg tagctaagtc agtaagcttt agaaccggca gaaaaggaga aatgcgtgtt 1620
    agagagcggtg attatcaacc gactcttcca catgctgggg ctgctaaaca aaatggttta 1680
    gctactcttg gtgctatttc aactgcattt gctgcggcta ctttgattgc agctagaaaa 1740
50  aaagaaaact ag 1752

```

<212> Type : DNA

<211> Length : 1752

SequenceName : SEQ ID 598

SequenceDescription :

55

Sequence

-----

<213> OrganismName : Streptococcus mutans UA159

<400> PreSequenceString :

```

60  atggaacaga agatttttag caaacgaaaa agtaagattg ctgggctttg tggagctatt 60
    ttaacgacta cagtgtgttc ccttcggtca ggtactgtaa tcgaggctga tgagacaata 120
    gaacagcctg tcgcagctga gactgtctcg caagctgatg gggacaatcc cgaacaaaca 180
    acaagcggtc aacaagaaac tgctcctcaa caaacgaaaa cttctcaaag ctacagcgca 240
    accgtagata gtgaagagtc agcaacttcc ccatctgatg aacagaccgt aagtcaaaaa 300
    gattcaaaact catcatctca aattgatcaa acgatagctg atacgaatcg ctctgactct 360
65  gatcatatatt caaaaacatc agccgctaca actgaagatc aagaagagaa agttaattct 420
    gcaaaagcac aaactgctgc cgcaaccaac aatcaagaca ctcgttatag tgcgaaagat 480
    gcttatggca attccaattt taacaagaca ttaactgaat ttggaaaaaa tgctaattgtt 540

```

```

gctgatgtaa cctataatgg cgtgagggat gaatatattg tagttaacga tcctagtgtc 600
ccttacgttc ctaatgcaaa cgaaattgca aaatacttaa aggaatattt aacagaactc 660
cgcaacatca ataattattgc tttcctgttg ccttctgttg atcaggttat gcaaaaatac 720
gcacaagatc gggctaacga agaagccaat gaaaaaaacg gcttggatca tgataactaat 780
5 ttacctatcc ctaataattt aacttgggtt gccgaagatg gacatttggg tatggatagc 840
agcatttcaat ccaaaagtca agaaggctat acacttgctt ctgataaagc aaccgcctac 900
tatctagcgc ttaactgggt tttctgactat tttaatattt acgatgaccc caacgatggc 960
ctcaaatcgt ttggacacgc tgtcagtatt ttgtcagacg ggggaactgg aatgggctta 1020
ggcttctgct caggtcaaga taatgaaaag ggaatgtggt acgcacaatt ggaatttggg 1080
10 ggtaacgata acgaagataa taccaacgat ttttctctt taaaaaacgg caagggaaga 1140
tgggtattat attataaagg aagtcctgtt aagtttcttc ctaacactac cttttgggtat 1200
gtaaaaaaag gcacttcccc tgatgcagct tctactcctc acaacagtga taaaccttca 1260
ttccagtcct ctaaagatct tgaccctaata ttcaaggccg ataatagatt ccaagaagga 1320
aagggaagcct cgtttcatca ggctatttct gcaacattta aatctcatcg cgatgaagtt 1380
15 ggtaataaag accaaaattc tctttctgct caactacctg atacaggagt tcaaaaaaat 1440
aatcaattag ccttgatagc ttttaggaaca ggcttgattt tactttccgg acttcttctt 1500
tcaaaaagaa aatccttaaa ataa 1524
<212> Type : DNA
<211> Length : 1524
20 SequenceName : SEQ ID 599
SequenceDescription :

Sequence
-----
25 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
atgacatttg aaaagcaaaa acacttttagt ttacgtaaac taaaatttgg tttagtttca 60
gttgcgatca tagcttttctt atttgcgtga acaaagactg cagaagctga cgagacagtg 120
ataactgaac aaaggcaaac aagtaagatt aacgcctagt ctcaaaaagt ggagaatcag 180
30 acttcaaatc aggttgaagc aaaaacggat agtgcaaaac aggatcctca agaaaaaaca 240
ggaagtgttg caactgatgc cccttcaatg aattcagcta ataatatgag tcagtctgac 300
aaacaaaaata ctgttaaatga aatatcttca gatagtcagc aaacaaaaac agatgaacaa 360
actgattttac cgcaaaaacag ctttaaacaa caactctgctc atgttaaaat gactactgaa 420
gcagagaaga ccccatcaca ttcgattaat acctttgtta atgatggtaa tggtaattgg 480
35 tattaccttg gtgctgatgg tagaaatgtt acaggcagtc atacgattgg tggcaagact 540
atgtattttg ctcaagatgg taagcaagtt aaagggtgctt ttgctcaaga ttcggatgga 600
aataaacattt attatgatag agatagtggg gagatgtgga ccaatcgctt tgtcaatgat 660
caaggcaattt ggtattatct taataatgat ggtgtccctg tcaccggtag tattactgtc 720
aatgggtcagt ctctgtattt taattcggat ggtagtcagg ttaaagggaa ttttgttgaa 780
40 gaagatggat ctttgcgtta ttatgataaa aattctggag atttactgag aaagacaagc 840
cgaaccattat atggtgttaa ctaccaattt gataatgatg gaaatgcaag ggcgattgac 900
aaaaattgagg ttgttaagac cagtccttga ttgtatagtt atgaatttgg tccttctgtt 960
tcaaagatta ttcttgagtt caatcataag gtaactcctg ctgttggttca tgctggtgca 1020
atggttaacaa ctgctggagt tcaaagaaaa attcttaatt cttatgtctc taatgcttca 1080
45 ggacatgttg tttactttga tagtagccat tatgtgacac ttgaattaga tattccttat 1140
gatccaaaatg atagcagccg aaatgcatca ccttttattt ttgactcagc agcctttcgt 1200
aataactggg tcaacagtta tactgtcaaa gtatagataatt tgcagggtgca agcagatggg 1260
tctaatagca gtcaaatatt cagttcagag caagatgcta tcaataatcg tttcttgcct 1320
acaacggatc gtttctcaga acgtggtagt tatggtaatt ttaattatgc cgcctatcaa 1380
50 ccagaagcag ctattggcgg tgagaagaat ccattgattg tctgggtgca tggtatagga 1440
gaagtaggca ctgatattaa tattccgctt ctagccagca atgtggctcg ttttaacggaa 1500
gatcctattc aaagccattt cacttctaca ggtagtggtg gtcaaaaagg agcctatgtg 1560
ctagtctctc aaagttcaat tccttgggtc caaaatcaaa cagctagctt aatggcgctc 1620
attaaagcct atgttagcaag ccattcagac atcgatagcc gacgcattta tttggcaggt 1680
55 gtttctaatt gtggcggtat gactctggat atgggagtcg cttatcctaa ctattttgca 1740
gccttagttc ctattgctgc ttcctatagt aatcaattaa cagataatca gattaccgct 1800
gctgctttga aagctctgaa aggtcaacca atgtggttga ttcatacacg aactgataaa 1860
acaatatctg cagatagtag tgttctacca ttctataaag agttacttca agctggcgca 1920
caaaataaat ggctttccta ttatgaaact aatgttggtg aacatcactc tggagtcact 1980
60 tataacggtc actgggtcttg gatttatctt tgaatgatc aagtaactgg cactcaaaat 2040
actgataacg ccaagaattg gtctggactt tctggcatgg ttgcgaccaa tccaacctat 2100
gggtgggtgat ctaaggctac tgtcaatggc agaacttata gtaatgtctt tgattgggca 2160
aatggctcagc gaagaaggta a 2181
<212> Type : DNA
65 <211> Length : 2181
SequenceName : SEQ ID 600
SequenceDescription :

```



Sequence  
-----

<213> OrganismName : Streptococcus mutans UA159  
5 <400> PreSequenceString :

atgaaaattt	ttataaaaaa	acaccaacaa	agtattcttt	actatagtct	tagttttctg	60
ctaccaagtt	ttataatggt	tctcgttcta	ttctccaaaa	atattttattg	ggggagtagc	120
acaactattt	tagctagtga	tggttttcat	caatatgtga	tttttgatgc	tctttttcgt	180
aatattctcc	atggaacgga	tagtttggtt	tactctttta	aggctgggct	tggttttaat	240
10 atttttgctc	tgacaagtta	ttacttggga	agttttttaa	cacottttac	ttactttttt	300
aatgtaaaaa	atatggcaga	tgctttttat	ctcttcactt	taatcaaatt	tgggtctaata	360
ggttttatctg	ctttttacag	tcttggggcaa	atttatacta	aaatctctaa	atcactcgtt	420
ttgatgctgt	caacatctta	tgctttaatg	agctttacta	gcagtcagtt	agaattaaac	480
aattgggtgt	atgttttttat	cctgctacca	cttattatgc	ttggtttaca	gcgttttagta	540
15 gaaaaaaggg	ggattttttct	ttatttttcta	actcttactt	gtttattttat	tcaaaattac	600
tatttttggtt	tcatgcacagc	tattttctta	actctttggt	tttttacgca	agtctcgtgg	660
gatattagaa	acagaatgaa	acgattaagt	gattttgtgc	tcgtatcaat	ctttgcaacg	720
ctgacaagtgc	ctttttatgct	gcttccaaca	tttcttgatt	taaagagcca	tgggtgaagta	780
20 ttaacagAAC	aaattagtct	attttcatca	gacatttggg	atttcgattt	ttttgctaaa	840
agtcttcttg	gtagtattga	tacgacaaaa	tatggctcta	ttccaacgat	ttatatcggg	900
ttacttccct	tgattttttgc	cattactttt	ttctttgtta	aatctataaa	atggcaagtt	960
aaagttagctt	attttctttt	attggctatt	cttattgcaa	gtttttatctt	tcaaccactt	1020
gattttatttt	ggcaagggaat	gcattcacct	aatatgtttt	tgcatcggtta	ttcttgggct	1080
ttctccttag	ttattgtcat	aatggcagct	gaaacgttaa	ctcggaataaa	ggatataaaa	1140
25 ttgaaaaaatt	tttatccagc	ctttaccttc	ttgggagtag	gacttttagc	aactttttta	1200
ttcaaggact	attataatta	tttgacacaa	gttaatttta	tattaacaa	tatcttttta	1260
gttagttatt	ttattattct	ttttactttt	tttaatcaat	tagttttctta	taaagttatt	1320
atttccttta	cacttatctt	tacaagtttt	gaaatagctt	taataacttt	ttatcaaatt	1380
gaagggtattc	aaactgactg	gaatttccct	tcaagagagg	tttatgaaga	taatgtaag	1440
30 gaaattgaca	actatgttaa	gaaaactaaa	aaagataact	tagaattttt	tcgaacagaa	1500
aaacaaattc	cccaaactta	caatgatggt	atgaaattta	attataatag	catttctcag	1560
ttctcatctg	tcaaaaaata	cttatcagca	caattattga	attctctagg	ctactattca	1620
caaggaaatc	attctaccat	tagttatcct	aataatacta	ttttgatgga	tagtcttttt	1680
tcaattaaat	actaatatta	taatcaaaat	cttcataaat	ttggattcca	tttaaaacag	1740
35 aaaaacaata	agctgcaact	ttacaaaaac	ttctattctc	ttccttttagc	acttatgtca	1800
aatcatattt	acaaagatgt	caagtttgac	tcttatcccc	ttgataatca	acaaaaattt	1860
gttaaatgaat	tgacagatct	aaatcttaca	cttttcaaag	aaatccctat	tatttcaagt	1920
gtcggaatgc	aagtttttaga	taatcgtggt	actattaatg	gttcaaaagg	aaataaggca	1980
caagtttact	atactgtaaa	gtgtcctgca	aatagtcaac	tttatatcag	ccttcctaac	2040
40 ttgacagtta	ataataaaga	cgaaaatgtc	tttataacaa	ctaacaagca	cacaagttct	2100
tatatcatag	acgaaagtta	ttatcttttt	aatttaggaa	attataaaaa	aactcaaaaa	2160
ttaatattta	agcttagttt	tccaaaaaat	aaaacgggta	gttatgattt	accacatatt	2220
tatgctctcg	atttaactgc	ctatcaaaaa	agtataaagc	aattaaaaag	tcaaactggt	2280
aaaacaacaa	ctaagaaaaa	taaaattttt	actacctatg	ttgccaacaa	gagaacttcc	2340
45 ttgattttaca	ctttaccata	tgataaagg	tggtttgcta	aacaaaatgg	aaaagcaatt	2400
aaaatatcta	aagcacaaaa	tggactaatg	aaaattgatg	tttctaaagg	tagtgggaag	2460
attataatga	cttttgtgcc	ccaaggacta	tatcaaggaa	ttcttcttac	ctgtctaggt	2520
atctttctct	ttgtatttta	ccaactttat	tacaaaaaat	ttaattttaa	ataa	2574

50 <212> Type : DNA  
<211> Length : 2574  
SequenceName : SEQ ID 601  
SequenceDescription :

55 Sequence  
-----

<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :

atgaaattga	aacataattt	aagaattgga	gcgggttgctt	ttgcctcaat	tcttttggtta	60
actgcttgcg	gatcaaaaac	atctaaaaaa	acagtaaccc	ttgcgactgt	tggaaacaaca	120
aatccatttt	cttatgagaa	aaagggaaaa	ttgacgggat	atgatatcga	agttgctaag	180
gaagttttca	aagcttctga	taaatacgat	gtcaaatatc	aaaaaacaga	gtggaccagc	240
atttttctctg	gtctagatag	tgacaaatat	caaatcggag	ctaacaatat	cagttatact	300
aaagagcgtg	ccaataaata	tctttattct	aatccaacgg	cttccaatcc	attgggtatta	360
65 gtggttccaa	aagatagtga	tattaagtct	tataacgata	ttgctgggca	tagcactcaa	420
gttggttcaag	gaatataaac	agtgtctatg	ctgcagaaat	tcaataaaaa	ccatgaaaac	480
aatcaagtta	aactaaactt	taccagtga	gatcttgccg	atcaaatccg	gaatgtcagt	540

gatggtaagt atgatttttaa aatttttgaa aaaatttcag cagaaacgat catcaaagag 600  
caaggacttg ataatttgaa agttattgat cttccttcag accaaaaacc atatgtttac 660  
tttatttttg cgcaagacca aaaagactta caaaagtttg tcaataaacg tctcaaaaaa 720  
ctttacgaga atggtacact tgaaaaatta tcgaaaaaat accttgaggg aagctatctt 780  
5 ccagataaaa aagatatgaa ataa 804  
<212> Type : DNA  
<211> Length : 804  
SequenceName : SEQ ID 602  
SequenceDescription :  
10  
Sequence  
-----  
<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :  
15 atgcgatttc ttgtctttct catcgcatth tttgctgctt tctataaatt tatcgagact 60  
gaacggattg attcaaatac agttgctgta aacctgatt cgctcatttt aaagcgattt 120  
ttaaaaaaaa atcaattaaa tgggatcatg attgtgacgg ggccagatgg taaggctcaa 180  
gtattttcaa atcaaagcaa ggtagatggc agtcctgttt caattaagga ttattttcct 240  
cttgcttctt tacaaaaatt gataacaggg gtggctatcc aacaattaat tgataaagga 300  
20 aaactgtctt taaacacacc ttttaagcaa tattatcctc aaattgaaaa tagtgaaaaa 360  
atcacgatac aaaatttact taccacaca agcggtttgg cagatcgaaa agaagttcct 420  
cagcaagtgc tgacaactca agagcagcaa ttggattttt cattgaccaa ttatcgcgta 480  
acttatcgaa aaaaaaggaa gtatgctaac attaatatg ctttgctagc tggcattatc 540  
agtcaaatta gcggtcaaaa ttatgagact tatgttcgtc aacacttctt aacagctggg 600  
25 aaggggtggc attttaaaaa gtatattcaa ataaaagata agtccaagtt agctgccttg 660  
tcagtgatgg atcaaagtac gacttgggat aagctgtcaa aagaagtgac atctaccttt 720  
ggagctggtg attatgcttc taggccagtg gattattgga aatttatgat ggcttttatt 780  
aatgaccaat ttgttcctgt cagcgaatac caacgttcta tgaaaatgac ttctaagagc 840  
tattatggcg gcctctatat cagccaaaag atgctgcatg caaatgggtg tggctttgat 900  
30 acttactctt gttttgctta ttcaaactct aaaaacaaac aggtcatggt tttgtttatc 960  
acaaacggta agtataaacg ggtcaaatcc ttagcagcta aagcctttta actatatgca 1020  
gattcgtatg cgctgaggaa aaatgaaacg tcaaaaataa 1059  
<212> Type : DNA  
<211> Length : 1059  
SequenceName : SEQ ID 603  
SequenceDescription :  
Sequence  
-----  
40 <213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :  
atgaagaaaa aaatagctct agcagctctt tcttttgtca gtgcagctgt tcttgagct 60  
tgcagctcag cacctgggtg ttcatcagat gcagctggta ataaaattgg agatactgta 120  
aaaattgggtt acaatcttga attatcagga gatgtagccg cttatggaca agctgaaaag 180  
45 aacggtgcta accttgctgt tgaagagatt aataagcgag gcggcattga tggcaaaaag 240  
attaaagtta tctcaaaaaga taataaatct gataacgggtg aagcatcaac aatctcaact 300  
aatcttgcta cccaaagtaa agtaaatgct atcttgggac cagcaacatc tgggtgctaca 360  
gcggtgctg ctcccaatgc caacgatgct gcagtaccac tcgtaacgcc ttctggaaca 420  
caagataatt tgacctattc aaaaggcaaa gttcaagatt acatcttcog tacaactttt 480  
50 caagatagct tccaaggaaa gatcattgcc aaatatgcaa cagataattt gaaagctaaa 540  
aaagttagcg tttactatga taagtcaagt gattacgccc aaggatttgc tgatgcattc 600  
aaaaaagcat ataaagggaa gattactgtt gaagatacct ttcaagctaa agaccaagat 660  
ttccaagcag ctctgaccaa gttaaaaaat aaagactttg atgccattgt gataccaggt 720  
tattatactg aaactgggtc gattacaaag caagcacgtg atatggggct taccagcct 780  
55 atcttaggac ctgatgggtt taatgatgaa aaatatgttg aagggtgctgg tgcagccaat 840  
accaataatg ttcatattgt atctgggtac tcaacaaaag ttgctttaac aaataaggct 900  
gaaaaattcc tgaaagatta taaggctaag tatgggtgaa agccaaatat gtttgccgct 960  
cttgcttatg attccgttta tatgattgct gatgctgcaa aagatgcaa aacatctaag 1020  
gatattgcaa caaacctagc taaattgaaa aactttaaag gtgtgacagg taaaatgaca 1080  
60 attgataaga aacataaccc tgtaaatca gccgttatgg ttggtcttaa agatggtaaa 1140  
gaagacacag ctactgctgt tgaagcaaaa taa 1173  
<212> Type : DNA  
<211> Length : 1173  
SequenceName : SEQ ID 604  
SequenceDescription :  
65  
Sequence

```
-----
<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
5 atgaagaaat taagcttatt attactagtt tgtttatctt tattaggctt atttgcctgt 60
  actttctaaaa aaacagccga caaaaaattg actgttgttg ctaccaattc tattattgct 120
  gatattacta agaatatcgc tggtaataag gttgtcttac atagtatcgt tctgtgttgg 180
  cgagatcctc acgaatatga gcctcttctc gaagatgtta aaaagacctc tcaggctgat 240
  gtcatttttt ataatgggat taatcttgaa aatggaggca atgcttgggt taccaaaacta 300
  gttaaaaaatg ctcataaaaa gacagacaag gattattttg cagtgaagca tagtggttaag 360
10 accatttatt tggaaaaatgc aaaagaaaaa ggaaaggaag atcctcatgc ttggcttgac 420
  cttaaaaaatg gtattattta tgctaaaaat atcatgaaac gtctatctga aaaagatcct 480
  aaaaacaaga gttattatca gaaaaatttt caagcctaca gcgccaaact tgaaaaacta 540
  cacaagtag ccaagaaaaa aatcagtcgt atccctactg agaagaaaat gatcgtaact 600
  agtgaagggt ttttcaagta tttctctaag gtttacgata ttccttctgc ctatatatgg 660
15 gaaattaata ccgaagaaga gggaacacca aatcaaatta aggctttagt gaaaaaatta 720
  aggaaaagtc ggggtgtctgc gctttttgta gaaagcagtg ttgatgatcg tccaatgaaa 780
  actgtttcaa aagatacagg tatcccaatt gccgctaaaa tttttacaga ttcagttgct 840
  aaaaaggagc aggcctggga tagttactat gcgatgatga agtggaaatag agataaaatt 900
  gcaaatggtc tgtcacaaatg a 921
20 <212> Type : DNA
  <211> Length : 921
      SequenceName : SEQ ID 605
      SequenceDescription :

25 Sequence
-----
<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
30 atgtttgttc atactaagac taagaaaaaa agaaagtggc aaaggaaagt gtttctactg 60
  ctgcttcttt ttttattgcc tatttgtgtca gtattggctt ttatttgttt atttattggc 120
  ggtggtacag ctgagtctca tgatgtggaa gcgacgacag ggggcgttaa gctttcagct 180
  aagcaatttg cagataagac aaagttagga atttcagaag aggaagctaa aaatgcctta 240
  gcttttgccg atagggtgat gtctcgctcat cattttacag ctcaagcaac tgctggagta 300
  ttggctgttg gctttcgtga aagtggcttt gatgtcaaaag cagttaataa ttctgggtgg 360
35 gtagctggct ttttccaatg gtctggctgg ggtagtcttg ttaatggtga tctgtggaaa 420
  gtagctagta aaagagagtt aactctagag gttgaggtag atttgatgag cactgaacta 480
  gatggctgat atgctgatgt tgtcaaaaaa gttggttctg cgactgatga aaaacaggct 540
  cttaaggatt ggtctcagta ttatgaaggt ttggtcggtta gtgatggtca aacgaaagct 600
  gataaaattg agagtgtggc aacaactatt tgtgaggtt taaagtctgg tggtaacaaat 660
40 tatgctaaag tgaataatac gggaacaaat tctactgcta tccgcagggg ttgggaaaaa 720
  attagtgttt ttgatggcca tgcttatgaa ggtagtgaaa attatcctca aggacaatgc 780
  acttggtatg tttataatcg tgctaaacag ttgggtgtta gcttcagttc ttatatgggg 840
  aatggcggtc agtggatatc agtgcaaggc taccattcta gtcatacacc taaagcacat 900
  acggcctttat cttttgtcaa tggtcaggca gggtctgatc caacttatgg tcatgttgct 960
45 tttgtagagg ctgttaaaga tgatgggagt attctaatac gtgagatgaa cgtttatggt 1020
  caaccagcta tgacgggtgc ctatcggaca tttgatgctg aaactgctaa acaattttgg 1080
  tatgtagagg gaaaataa 1098
  <212> Type : DNA
  <211> Length : 1098
      SequenceName : SEQ ID 606
      SequenceDescription :

50 Sequence
-----
55 <213> OrganismName : Streptococcus mutans UA159
  <400> PreSequenceString :
  atgaaaatga aacgtaaaact attaaagcttg gtttcagtcc ttactatttt attgggagct 60
  ttttgggtaa cgaagattgt aaaagctgac caagtcacaa attatacaaa tacggcttct 120
  atcacaaaat cagatggtac agcactttct aatgatccat ctaaggctgt taattattgg 180
60 gaaccacttt ctttcagtaa ttctattact ttcccagatg aagtcaagtat taaggctggg 240
  gatactttta ccattaagtt gccagagcaa ttacaattta cgactgctct aactttcgtat 300
  gttatgcata ccaatgggca attagctggg aaagcaacaa ctgacctaata tacaggagaa 360
  gtaacagtta cctttactga tatttttgaa aaactgccta atgataaggc tatgacatta 420
  aattttaatg cacaattgaa tcataacaat atttctatct ctggtgttgt aaactttaac 480
65 tataataatg ttgcttatag ctcttatggt aaagacaaag atattacgcc aataagttcca 540
  gatgttaaca aagtgggtta tcaggataaa agtaatctg gtttgattca ctgggaaagt 600
  ctcatataca acaaacaggg tgctattgat aatttgactt tgactgatgt tgtcggagaa 660
```

```
gatcaagaaa tcgtaaaaga ttccttggtt gctgcacgct tgcagtacat tgctgggtgat 720
gatgttgaca gtttagatga agctgcttcg cgaccttatg ctgaggatatt ttcaaaaaaat 780
gttacttata aaactaatga tttaggattg acaacaggat ttacctatac aattccagga 840
tccagtaaca acgctatctt tatctcttat actactcgtt taacttcttc tcaatctgct 900
5 ggtaaagatg tcagcaacac tattgctatt tcaggaaata atattaatta ttccaatcaa 960
acaggctacg ctcgatttga atccgcatat ggtagagcta gttctagagt aaagaggcaa 1020
gcagaacaaa caactgttac tgaacaaca acttcgtcat cttctgaaac gacaactagt 1080
gaagcgacaa cagaaacaag tagtacaaca aataataatt caactactac agaaacagct 1140
actagacaaa caggagcttc aacaacacaa acaaaaacga ctgcttctca aacgaatggt 1200
10 ccgacaacaa caaacataac aacaacttca aaacaagtaa ccaagcaaaa agcgaaattt 1260
gttttaccat caacagggtga acaagcaggg cttttgttaa ctactgtagg tcttgtaatt 1320
gttgctgtgg cagggtgtcta tttctataga acacgtcgtt aa 1362
<212> Type : DNA
<211> Length : 1362
15 SequenceName : SEQ ID 607
SequenceDescription :

Sequence
-----
20 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
atgacattta aaaagttagt tttagggttg ttgagttttg tggctgtatt tacttttagta 60
gcttgcagtt cttctaattc aaaaaattta caggatgata ttaaagaaaa gaaaaagtta 120
gttggtgctg ttagtcggga ctatgctcct tttgagttca aggcctctgt gaacggtaag 180
25 gatactgttg ttggtgctga tattgatttg gcaaaagcaa ttgctaaaga attgggagtg 240
aaactggaat tatcttccat gagttttgat aatgctctgt ccagtttaaa aacaggaaaa 300
gcagacatag ctatctctgg tttatcttat accaagggaac gtgctcaagc ctatgacttt 360
tcagaagctt attataaaac ggaaaatgct attcttatta aaaagtctga tttgaacaaa 420
tatacaatga tttcttcttt taataataag actaaagtag ctgttcaaaa aggaacgatt 480
30 gaagaaggat tagctaaaaa tcaattaaaa caatcaaaaa ttacctcttt gacttcgatg 540
ggcgaagctg ttaatgagct caaatctggt cagggttgatg ctattgatct tgaaaaacca 600
gtggcagaag gttatgtgtc tcaaaaatagt gatttgggtc ttgccaaagt tgccttaaaa 660
acgggtgaag gggatgccaa agcagttgct ctgcctaaag acagtgggtc attagttaag 720
acgggtgaata aggttattaa gaaactcaaa aaagaagata aatacaagca gtttatcagc 780
35 gatgctgtta aattaactgg tcagcaagtg gattga 816
<212> Type : DNA
<211> Length : 816
SequenceName : SEQ ID 608
SequenceDescription :

Sequence
-----
40 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
45 atgaaaaagc attttttcat gacttttagc ctcttgctag cggctgtttt tctagtgtgt 60
tggtccaatc ttcccgattc tggacagagg aattgggata agataataaa gagaggaatg 120
cttaaaattg ctactgcagg aacgctttat ccgcaatctt atcatgatga tcataataaa 180
ttgacgggtt atgatgttga aattctaaaa gaaataggaa aacgtttggg attgaaagt 240
cagtttactg aaatgggtgt cgatgggtatg ctgacagcca tcaagagcgg tcagatcgat 300
50 gttgctaatt attccctaga agacggcaac aaaaatatca gtaagtttt gagaacctct 360
ccctataaat attcttttac gtcaatgggt gtccgctcta aagatgattc aggtattcat 420
tcttggtcag accttaaggg aaaaaagct gccggagctg ccagcactaa ttatatgaag 480
attgctaaaa aattaggagc aaaattagtt gtctatgata atgtcaccaa cgatgtttat 540
atgaaagatt tagttaatgg tcgtacagat gtcattatca atgattatta tctgcaaaag 600
55 atagctgttg cagcagtcac agacaaatac gctatcaaaa taaaccaagg actttatgcc 660
aatccttaca gcactagttt tacattgtct ttgaaaaaca aagtactgca aaagaaaatc 720
aataaggctg tgaagacat gcgcaaggat ggcaccctaa ccaagctatc taagaagt 780
ttccaaggag aagacgtcac taaaaaacat tataatagct ataaaaaat tgatatctct 840
gacgttgatt aa 852
60 <212> Type : DNA
<211> Length : 852
SequenceName : SEQ ID 609
SequenceDescription :

Sequence
-----
65 <213> OrganismName : Streptococcus pneumoniae R6
```

```

<400> PreSequenceString :
atgaagcttt tgaaaaaaat gatgcaagtc gcactagcca cttttttctt cggtttgcta      60
gggaccagta cagtatttgc agatgattct gaaggatggc agtttgtcca agaaaaatggt      120
agaacctact acaaaaaagg ggctctaaaaa gaaacctact ggagagtgat agatgggaag      180
5  tactattatt ttgatccttt atccggagag atgggtgtcg gctggcaata taccctgct      240
ccacacaagg ggggttacgat tggctcttct ccaagaatag agattgctct tagaccagat      300
tggtttttatt ttgggtcaaga tgggtgtctta caagaatttg ttggcaagca agtttttagaa      360
gcaaaaactg ctacgaatac caacaaacat catggggaag aatatgatag ccaagcagag      420
aaacgagtcct attattttga agatcagcgt agttatcata ctttaaaaaac tggttggatt      480
10 tatgaagagg gttattggta ttattttacag aaggatggg gctttgatcc tcgcatcaac      540
agattgacgg ttggagagct agcagctggg tgggttaagg attacctctc tacgtatgat      600
gaagagaagc taaaagcagc tccatgggtac tatctagatc cagcaactgg ctggcaaaac      660
cttgggaaca aatgggtact tctccgttca tcaggagcta tggcaactgg ttgggtatcag      720
gaagggttcca cttgggtacta tctaaatgca agtaatggag atatgaaaac aggctgggtc      780
15 caagtcaatg gtaactggta ctatgcctat gattcagggt ctttagctgt taataccaca      840
gtagggtggtt actacttaaa ctataatggt gaatgggtta agtaa                        885

<212> Type : DNA
<211> Length : 885
      SequenceName : SEQ ID 610
20      SequenceDescription :

Sequence
-----
<213> OrganismName : Streptococcus pneumoniae R6
<400> PreSequenceString :
atgaaacttt tgaaaaaaat gatgcaagtt ctactagcag tctttttctt tggtttgcta      60
gctacaaata cggtatattgc gaataccaca ggtggccgat ttgttgataa ggataataga      120
aaatattatg taaaagatga tcataaagca atctattggc ataaaaataga cggtaaaact      180
tactattttg gtgatatggg agagatgggt gtcgggtggc aataacttaga aattcctgga      240
30 acaggttatac gtgataattt attcgataac caaccagtta atgaaattgg ccttcaggag      300
aagtgggtact attttggaca agatgggtgct ttgctagaac aaacagataa acaagtacta      360
gaggcaaaaa cgtctgaaaa tacaggaaaa gtatacggtg aacaatatcc tctatctgct      420
gaaaagagaa cttattattt tgataataat tatgctgtaa agacaggctg gatttatgaa      480
gacggcaatt ggtattattt aaataagcta ggaaattttg gcgatgattc ttacaatcca      540
35 ctaccaattg gtgaagttgc taagggttgg actcaagatt ttcattgtac tattgacatt      600
gatagaagca aaacctgctcc atggtaactac ctagatgctt caggtaagat gcttacagat      660
tggcaaaaag taaacggaaa atgggtattat ttgggtcctc ctgggttctat ggcaacagg      720
tggaaatatg tacgaggcaa atgggtattac ttagataata aaaatgggtga tatgaaaaca      780
ggatggcaat accttggtaa caagtgggtac tacctccgtt catcaggagc tatggtaact      840
40 ggctgggtac aagatgggtt aacttgggtc tacctaaatg caggtaatgg agacatgaag      900
acaggttggt ttcagggtcaa tggcfaatgg tactatgctt atagctcagg tgccttggca      960
gtgaatacga ccgtagatgg ctattctgtc aactataatg gcgaatgggt tcaataa      1017

<212> Type : DNA
45 <211> Length : 1017
      SequenceName : SEQ ID 611
      SequenceDescription :

Sequence
-----
50 <213> OrganismName : Streptococcus pneumoniae R6
<400> PreSequenceString :
atgaataaga aaaaaatgat tttacaagtc ctagccagcg tcgctatctt aggggctgggt      60
tttgttgctg ctcagcctac tgttgtaaga gcagaagaat ctcccgtagc cagtcagtcct      120
55 aaagctgaga aagactatga tgcagcgaag aaagatgcta agaattgcga aaaaagcagta      180
gaagatgctc aaaaggcttt agatgatgca aaagctgctc agaaaaaata tgacgaggat      240
cagaagaaaa ctgaggagaa agccgcgcta gaaaaagcag cgtctgaaga gatggataag      300
gcagtggcag cagttcaaca agcgtatcta gcctatcaac aagctacaga caaagccgca      360
aaagacgcag cagataagat gatagatgaa gctaagaaac gcgaagaaga ggcaaaaact      420
60 aaatttaata ctgttcgagc aatggtagtt cctgagccag agcagttggc tgagactaag      480
aaaaaatcag aagaagctaa acaaaaagca ccagaactta ctaaaaaact agaagaagct      540
aaagcaaaat tagaaggagg tgagaaaaaa gctactgaag ccaaacaaaa agtggatgct      600
gaagaagtcg ctctcaagc taaaatcgct gaattggaaa atcaagttca tagactagaa      660
caagagctca aagagattga tgagtctgaa tcagaagatt atgctaaaga aggtttccgt      720
65 gctcctcttc aatctaaatt ggatgccaaa aaagctaaac tatcaaaact tgaagagtta      780
agtataaga ttgatgagtt agacgctgaa attgcaaaac ttgaagatca acttaaagct      840
gctgaagaaa acaataatgt agaagactac tttaaagaag gtttagagaa aactattgct      900

```

```

gctaaaaaag ctgaattaga aaaaactgaa gctgaccta agaaagcagt taatgagcca 960
gaaaaaccag ctccagctcc agaaactcca gcccagaag caccagctga acaacaaaaa 1020
ccagcgccgg ctctccaacc agctcccga ccaaaaccag agaagccagc tgaacaacca 1080
aaaccagaaa aaacagatga tcaacaagct gaagaagact atgctcgtag atcagaagaa 1140
5 gaatataatc gcttgactca acagcaaccg ccaaagctg aaaaaccagc tcctgcacca 1200
aaaacaggct ggaacaaga aaacggatg tggctactt acaatactga tgggtcaatg 1260
ggacaggat ggctccaaa caacggttca tggctactacc tcaacagcaa tgggtgctatg 1320
gctacagggt ggctccaata caatggttca tggctattacc tcaacgctaa cgggtgctatg 1380
gcaacagggt gggtcaaagt caacggttca tggctactacc tcaacgctaa tgggtgctatg 1440
10 gctacagggt ggctccaata caacggttca tggctattacc tcaacgctaa cggcgctatg 1500
gcaacagggt gggtcaaagt caacggttca tggctactacc tcaacgctaa tgggtgctatg 1560
gctacagggt gggtccaata caacggttca tggctactacc tcaacgctaa cgggtgctatg 1620
gcaacagggt gggtcaaagt caacggttca tggctactacc tcaacgctaa tgggtgctatg 1680
15 gcaacagggt gggtgaaaga tggagatacc tggctactacc ttgaagcacc aggtgctatg 1740
aaagcaagcc aatgggtcaa agtatcagat aaatgggtact atgtcaatgg tttaggtgcc 1800
cttgacgtca acacaactgt agatggctat aaagtcaatg ccaatgggtga atgggtttaa 1860

```

<212> Type : DNA

<211> Length : 1860

20 SequenceName : SEQ ID 612

SequenceDescription :

Sequence

-----

25 <213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

```

atgaaaattt tacggtttat agcaagagga acaagttatt acttgaagat gtcagttaaa 60
aagcttggtc ctttttttagt agtaggattg atgctagcag ctgggtgatag tgtctatgcc 120
tattccagag gaaatggatc gattgcgcgt ggggatgatt atcctgctta ttataaaaaa 180
30 gggagccagg agattgatca gtggcgcatg tattctcgtc agtgacttcc ttttgtagcc 240
tttcgtttga gtaatgtcaa tgggttttgaa attccggcag cttatggaaa tgcgaatgaa 300
tggggacatc gtgctcgctc ggaagggttat cgtgtagata atacaccgac gattgggtcc 360
attacttggt ctactgcagg aacttatggg catgttgctt ggggtgtcaaa tgaatgggga 420
gatcagattg agattgagga atataactat ggttatacag aatcctataa taaacgagtt 480
35 ataaaagcaa acacgatgac aggtatttat cattttaaag atttggtatg tggcagtggt 540
gggaatagtc aatcctcagc ttcaacaggc ggaactcatt attttaagac caagtctgct 600
attaaaactg aaccocctag tagtgcaact gtgattgatt actattatcc tgggggagaag 660
gttcattatg atcagatact tgaaaaagac ggctataagt ggttgagtta tactgcctat 720
aatggaagct atcgttatgt tcaattggag gctgtgaata aaaatcctct aggtaatctc 780
40 gttctttctt caacaggagg aactcattat ttttaagatc agtctgctat taaaactgaa 840
cccctagtta gtgcaactgt gattgattac tattatcctg gagagaaggt tcattatgat 900
cagatacttg aaaaagacgg ctataagtgg ttgagttata cggcttataa cgggaagtcgt 960
cgctatatac agctagaggg agtgacttct tcacaaaatt atcagaatca atcaggaaat 1020
atctctagct atggatccaa taatagttca actgtcgggt ggaagaaaat aaatggtagt 1080
45 tggtatcatt tcaaatcaaa tgggttctaaa tcaacaggat ggctgaaaga cgggttctagc 1140
tgggtattatt tgaaattatc tgggtgaaatg cagacaggat ggttaaagga gaatggctcg 1200
tgggtattatc tgggtagttc aggggcaatg aaaacaggct ggtaccaggt ctctggtgag 1260
tgggtattatt ctactcttc agggcgctta gctattaata cgacgggtgga tggctacaga 1320
50 gtaaacagtg atggagaacg agtatag 1347

```

<212> Type : DNA

<211> Length : 1347

SequenceName : SEQ ID 613

SequenceDescription :

55 Sequence

-----

<213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

```

atgttttgc caaaagcga aagaaaagta cattattcaa ttcgtaaatt tagtattgga 60
gtagctagt tagctgttgc cagtcttggt atgggaagtg tgggttcattg cagcagagaac 120
gaggaagta ccaagcagc cacttcttct aatatggcaa agacagaaca taggaaagct 180
gctaaacaag tcgtcgatga atatatagaa aaaatggtta gggagattca actagataga 240
agaaaacata ccaaaatgt cgccttaaac ataaagttag gcgcaattaa aacgaagtat 300
ttgcgtgaat taaatgtttt agaagagaag tcgaaagatg agttgccgtc agaaataaaa 360
65 gcaaaagtta acgagctttt tgagaagttt aaaaaagata cattgaaacc aggagaaaag 420
gtagcagaag ctaagaagaa ggttgaaaga gctaagaaaa aagccgagga tcaaaaagaa 480
gaagatcgtc gtaactaccc aaccaatact taaaaacgc ttgaacttga aattgctgag 540

```

	ttcgaatgtga	aagttaaaga	agcggagctt	gaactagtaa	aagagggaagc	taaagaatct	600
	cgaaacgagg	gcacaattaa	gcaagcaaaa	gagaaagttg	agagtaaaaa	agctgaggct	660
	acaagggttag	aaaacatcaa	gacagatcgt	aaaaaagcag	aagaagaagc	taaacgaaaa	720
	gcagatgcta	agttgaagga	agctaattgta	gcgacttcag	atcaaggtaa	accaaagggg	780
5	cgggcaaaac	gaggagttcc	tggagagcta	gcaacacctg	ataaaaaaga	aatgatgcg	840
	aagtcttcag	attctagcgt	aggtgaagaa	actcttccaa	gctcatccct	gaaatcagga	900
	aaaaaggtag	cagaagctga	gaagaagggt	gaagaagctg	agaaaaaagc	caaggatcaa	960
	aaagaagaag	atcgccgtaa	ctacccaacc	aataacttaca	aaacgcttga	ccttgaaatt	1020
	gctgagtcg	atgtgaaagt	taaagaagcg	gagcttgaac	tagtaaaaga	ggaagctaag	1080
10	gaacctcgag	acgaggaaaa	aattaagcaa	gcaaaaagcga	aagttgagag	taaaaaagct	1140
	gaggctacaa	ggttagaaaa	catcaagaca	gatcgtaaaa	aagcagaaga	agaagctaaa	1200
	cgaaaagcag	cagaagaaga	taaagttaaa	gaaaaaccag	ctgaacaacc	acaaccagcg	1260
	ccggctactc	aaccagaaaa	accagctcca	aaaccagaga	agccagctga	acaacaaaaa	1320
	gcagaaaaaa	cagatgatca	acaaagctga	gaagactatg	ctcgtagatc	agaagaagaa	1380
15	tataatcgct	tgactcaaca	gcaaccgcca	aaaactgaaa	aaccagcaca	accatctact	1440
	ccaaaaacag	gctggaaaca	agaaaacggt	atgtggtact	tctacaatac	tgatgggttca	1500
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	atctaaacgc	taatgggtgct	1560
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	atctaaacgc	taatgggttca	1620
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatggcgct	1680
20	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatggcgct	1740
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	1800
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	1860
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	1920
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	1980
25	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	2040
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	2100
	atggcgacag	gatgggtcca	aaacaacggt	tcatggtact	acctaaccag	caatgggtgat	2106

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2106

30 SequenceName : SEQ ID 614  
SequenceDescription :

Sequence

-----

35 &lt;213&gt; OrganismName : Streptococcus pneumoniae R6

&lt;400&gt; PreSequenceString :

	atgaaaaaaa	ctacaatat	atcattaact	acagctgcgg	ttatttttagc	agcatatgtc	60
	cctaataaac	caatcctagc	agcatatgtc	cctaataaac	caatcctagc	agataactcct	120
	agttcgggaag	taatacaaga	gactaaagtt	ggaagtatta	ttcaacaaaa	taatatcaaa	180
40	tataaggttc	taactgtaga	aggtaacata	ggaactgttc	aagtgggttaa	tggaagtact	240
	cctgtagagat	tggaagctgg	tcaagatgga	aaaccattca	cgattcctac	aaaaatcaca	300
	gtaggtgata	aagtattttac	cgttactgaa	gtagctagtc	aagcttttag	ttattatcca	360
	gatgaaacag	gtagaattgt	ctactatcct	agctctatta	ctatcccatc	aagcataaaa	420
	aaaatacaaa	aaaaaggctt	ccatggaagt	aaagctaaaa	ctattatttt	tgacaaaggc	480
45	agtcagctgg	agaaaattga	agatagagct	tttgattttt	ctgaattaga	agagattgaa	540
	ttgcctgcat	ctctagaata	tattggaaca	agtgcatttt	cttttagtca	aaaattgaaa	600
	aagctaacct	tttctcctcaag	ttcaaaatta	gaattaatat	cacatgaggc	ttttgctaata	660
	ttatcaaaat	tagagaaact	aacattacca	aaatcggtta	aaacattagg	aagtaatacta	720
	tttagactca	ctactagctt	aaaacatggt	gatgttgaa	aaggaaatga	atcgtttgcc	780
50	tcagttgatg	gtgtttttgtt	ttcaaaagat	aaaactcaat	taattttatta	tccaagtcaa	840
	aaaaatgacg	aaagttataa	aacgcctaag	gagacaaaag	aacttgcatc	atattcggtt	900
	aataaaaaat	cttacttgaa	aaaactcgaa	ttgaatgaag	gtttagaaaa	aatcggtact	960
	tttgcatctg	cggatgcgat	taaacttgaa	gaaattagct	taccaaatag	tttagaaact	1020
	attgaacggt	tagcctttta	cggttaattta	gaattaaaag	aacttatatt	accagataat	1080
55	gttaaaaaat	ttggtaaaaca	cgttatgaac	ggtttaccaa	aatttttaac	attatctggt	1140
	aataaatatca	actcattgcc	gtccttcttc	ctaagtggcg	tcttagattc	attaaaggaa	1200
	attcatatta	agaataaaaag	tacagagttt	tctgtgaaaa	aagatacatt	tgcaattcct	1260
	gaaactgtta	agttctatgt	aacatcagaa	catataaaag	atgttcttaa	atcaaattta	1320
	tctactagta	atgatatcat	tgttgaaaaa	gtagataata	taaaacaaga	aactgatgta	1380
60	gctaacccta	aaaagaattc	taatcaggga	gtagttgggt	gggttaaaga	caaagggtta	1440
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1500
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1560
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1620
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1680
65	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1740
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1800
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1860

```

    tgggtattact taaacgaatc aggttcaatg gctactgggtt ggggttaaaga caaaggctta 1920
    tgggtattact taaatgaatc aggttcaatg gctactgggtt ggggttaaagt ttctggtaaa 1980
    tgggtactata cctataattc aggagattta ttagtaaaca cgactacacc cgatggctat 2040
    cgagtcaatg ctaacgggtga gtgggtagga tag 2073
5  <212> Type : DNA
    <211> Length : 2073
        SequenceName : SEQ ID 615
        SequenceDescription :

10 Sequence
    -----
    <213> OrganismName : Streptococcus pneumoniae R6
    <400> PreSequenceString :
    atggaaatta atgtgagtaa attaagaaca gatttgcctc aagtcggcgt gcaaccatat 60
15  aggcaagtac acgcacactc aactgggaat cgcattcaa ccgtacagaa tgaagcggat 120
    tatcactggc ggaaagaccc agaattaggt tttttctcgc acattgttgg gaacggttgc 180
    atcatgcagg taggacctgt tgataatggg gcctgggacg ttgggggcgg ttggaatgct 240
    gagacctatg cagcgggttga actgattgaa agccattcaa ccaaagaaga gttcatgacg 300
    gactaccgcc tttatatcga actcttacgc aatctagcag atgaagcagg tttgccgaaa 360
20  acgcttgata cagggaagttt agctggaatt aaaacgcacg agtattgcac gaataaccaa 420
    ccaaacaacc actcagacca cgttgaccct tatccatatac ttgctaaaatg gggcattagc 480
    cgtgagcagt ttaagcatga tattgagaac ggcttgacga ttgaaacagg ctgggcagaag 540
    aatgacactg gctactggta cgtacattca gacggctcct atccaaaaga caagtttgag 600
    aaaatcaatg gcacttggtg ctactttgac agttcaggct atatgcttgc agaccgctgg 660
25  aggaagcaca cagacggcaa ctggtactgg ttgcacaact caggcgaaat ggctacaggc 720
    tgggaagaaa tcgctgataa gtggtactat ttcaacgaag aaggtgccat gaagacaggc 780
    tgggtcaagt acaaggacac ttggtactac ttagacgcta aagaaggcgc catggtatca 840
    aatgccttta tccagtcagc ggacggaaca ggctggtact acctcaaacc agacggaaca 900
    ctggcagaca ggccagaatt cacagtagag ccagatggct tgattacagt aaaataa 957
30  <212> Type : DNA
    <211> Length : 957
        SequenceName : SEQ ID 616
        SequenceDescription :

35 Sequence
    -----
    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgactttcg cctattgggtg tattctgatt gcctacctat tgccgctttt ttgtgcggcg 60
40  tatgccaaaa aagcgggcgg attcgggttt aaagacaacc acaatccgcg cgattttctg 120
    gcgcgcacgc aaggcacagc cgcgcgtgcc cacgcgcgcg agcaaaacgg ttttgaagcc 180
    ttgacacgtt ttgcagccgc cgttttgacg gcacacgcaa ccggcaatgc cggacaagca 240
    accgtcaaca cgcttgccgg cctgttcacg ctgttccgcc tcgcctttat ctggtgttac 300
45  atcgcagaca aagcagcatt acgctcgctg atgtgggtgg gcggatttgt ctgcaccgtc 360
    gggctggttg tcgtggctgc ttga 384
    <212> Type : DNA
    <211> Length : 384
        SequenceName : SEQ ID 617
        SequenceDescription :

50 Sequence
    -----
    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgaacaaaa tataccgcat catttggaat agtgcctca atgcctgggt cgccgtatcc 60
55  gagctcacac gcaaccacac caaacgcgcc tccgcaaccg tgaagaccgc cgtattggcg 120
    acactgttgt ttgcaacggg tcaggcgaat gctaccgatg aagatgaaga agaagagtta 180
    gaatccgtac aacgctctgt cgtaggagac attcaagcca gtatggaagg cagcggcgaa 240
60  ttggaaacga tatcattatc aatgactaac gacagcaagg aatttgtaga cccatacata 300
    gtagttaccc tcaaagccgg cgacaacctg aaaatcaaac aaaacaccaa tgaaaacacc 360
    aatgccagta gcttcaccta ctgctgaaa aaagacctca caggcctgat caatgttgaa 420
    actgaaaaat tatcgtttgg cgaaacggc aagaaagtca acatcataag cgacaccaa 480
    ggcttgaaat tcgcgaaaga aacggctggg acgaacggcg acaccacggg tcatctgaac 540
65  ggtatcgggt cgactttgac cgatacgctt gcgggttctt ctgcttctca cgttgatgcg 600
    ggtaacccaa gttacacatta cactcgctga gcaagtatta aggatgtgtt gaatgcgggt 660
    tggaatatta aggggtgtta aactggctca acaactggtc aatcagaaaa tgtcgatttc 720

```



```

gtccgcactt acgacacagt cgagttcttg agcgcagata cgaaaaaac gactgttaat 780
gtggaagaca aagacaacgg caagagaacc gaagttaaaa tcggtgcgaa gacttctgtt 840
attaaagaaa aagacggtaa gttgggtact ggtaaaggca aaggcgagaa tgggtcttct 900
acagacgaag gcgaaggctt agtgactgca aaagaagtga ttgatgcagt aaacaaggct 960
5 ggttggagaa tgaaaacaac aaccgctaatt ggtcaaacag gtcaagctga caagtttgaa 1020
accgttacat caggcacaaa tgtaaccttt gctagtggta aagggtacaac tgcgactgta 1080
agtaaagatg atcaaggcaa catcactgtt atgtatgatg taaatgtcgg cgatgccccta 1140
aacgtcaatc agctgcaaaa cagcgggttg aatttggatt ccaaagcggg tgcaggttct 1200
tcgggcaaa gtcacgcgg caatgtttcg ccgagcaagg gaaagatgga tgaaaccgtc 1260
10 aacattaatg ccggcaacaa catcgagatt agccgcaacg gtaaaaatat cgacatcgcc 1320
acttcgatgg cgccgcagtt ttccagcggt tgcctcggcg cgggggcaga tgcgcccact 1380
ttaagcgtgg atgacgaggg ccggttgaat gtcggcagca aggatgccaa caaaccgtc 1440
cgcattacca ttatcgcccc gggcggttaa gagggggatg ttacaaacgt cgcacaactt 1500
aaaggcgtgg cgcaaaactt gaacaaccgc atcgacaatg tggacggcaa cgcggtgcg 1560
15 ggcatcgccc aagcgattgc aaccgcaggt ctggttcagg cgtatctgcc cggcaagagt 1620
atgatggcga tcggcgccgg cacttatcgc ggcaagccg gttacgccat cggctactcc 1680
agtatttcgg acggcggaat ttggattatc aaaggcacgg ctccggcga ttccgcgccg 1740
catttcgggtg cttccgcata tgcggttat cagtggtaa 1779
<212> Type : DNA
20 <211> Length : 1779
    SequenceName : SEQ ID 618
    SequenceDescription :

Sequence
-----
25 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
attcttttgg ctgaagggtca aaaatcagcc gtcaccgagt attacctgaa tcacggcaca 60
tgccccagca acaacagtga tgccggcggtg gcatccaccg ccaccgacat caaaggaaaa 120
30 tatgttaaag aagttaaagt cgaaaaaggc gtcattaccg ccacaatgct ttcaagcggc 180
gtaaacacacg aaatcaaagg caaaaaactc tccctgtggg ccaagcgtca agccggttcg 240
gtaaaatggt tctgcccaga gccggttgag cgcgcgcgca acaacgcgcg caacgacgcc 300
gtcaccgcgg ccaccgccaa cggcaacggc aagatcgaca ccaaacacct gccgtcaacc 360
tgccgcgacg cagcatctgc cgtttgcata gaaacaccac ctacggcttt ctataaaaat 420
35 acctaa 426
    <212> Type : DNA
    <211> Length : 426
        SequenceName : SEQ ID 619
        SequenceDescription :

Sequence
-----
40 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
45 atgaaaaaca ccgacaaacg gacaaccgaa acacaccgca aagccccgaa aaccggccgc 60
atccgcttct cgctgtctta cttagccata tgctgtcgt tcggcattct tccccaaagt 120
tgggcgggac acacttattt cggcatcaac taccaatact atcgcgactt tgccgaaaaat 180
aaaggcaagt ttgcagtcgg ggcgaagatg attgagggtt acaacaaaaa aggggagttg 240
gtcgcaaat caatgacaaa agccccgatg attgattttt ctgtggtgtc gcgtaacggc 300
50 gtggcggcat tgggtggcga tcaatatatt gtgagcgtgg cacataacgg cggctataac 360
aacgttgatt ttggtgcgga aggaagaaat cccgatcagc accgtttttt ttaccaaatt 420
gtgaaaagaa ataattataa gctgacaat tcacaccctt acaacggcga ttaccatatt 480
ccgcgttttg ataaatttgc cacagatgca gaacctgtcg aaatgacgag tgacatgagg 540
gggaataacct attccgataa agaaaaatat cccgagcgtg tccgcatcgg ctcaggacac 600
55 cactattggc gttatgatga tgacaaacac ggcgatttat cctactccgg cgcattggtta 660
attggcggca atacacatat gcagggttgg ggaaataatg gcgtagttag tttgagcggc 720
gatgtgcgcc atgccaacga ctatggccct atgccgattg caggtgcggc aggcgacagc 780
ggttcgcca tggtttattt tgacaaaaca aacaataaat ggctgctcaa cggagtttta 840
caaaccggct acccttattc cggcagggaa aacggtttcc agctgatacg caaagattgg 900
60 ttctacgatg acatttacag aggcgatata cataccgtct tttttgaacc gcgcagtaac 960
ggacattttt cttttacatc caacaacaac cgtacgggta cggtaacaga aaccaacgaa 1020
aagggtttcca atccaaagct taaagtacag acagtccgac tgtttgacga atctttgaat 1080
gaaactgata aagaaccagt ttacgcggca gggggtgtta atcagtaccg tccaagggtta 1140
aacaacgggt aaaaaccttc ttttatcgat tacggcaacg gcaaaactcat cttatcaaac 1200
65 aacatcaacc aaggcgccgg cggtttgat tttgaagggt attttacggg ctgcctgaa 1260
aacaacgaaa cgtggcaagg cgcggcggtt catatcagtg aagacagtac cgttacttgg 1320
aaagtaaacg gcgtggcaaa cgaccgcctg tccaaaatcg gcaaaaggcac gctgcacggt 1380

```

```

5  caagccaaag gggaaaaacca aggcctcgatc agcgtgggag acggtacagt cattttggat 1440
   cagcaggcag acgataaagg caaaaaacaa gccttttagtg aaatcggctt ggtcagcggc 1500
   aggggtacgg tgcaactgaa tgccgataat cagttcaacc ccgacaaact ctatttcggc 1560
   tttcgcggcg gacgttttga tttaaacggg cattcgcctt cgttccaccg tattcaaaat 1620
   accgatgaag gggcgatgat tgtcaatcat aatgccacaa caacatccac cgttaccatt 1680
   acaggggaatg aaagtattac acaaccgagt ggtaagaata tcaatagact taattacagc 1740
   aaagaaattg cctacaacgg ttggtttggc gagaaagata cgacaaaaac gaacgggcgg 1800
   ctcaaccttg tttaccagcc cgccgcagaa gaccgcaccc tgctgctttc cggcggaaca 1860
   aatttaaacc gcaacatcac gcaaaaaaac ggcaaaactgt ttttcagcgg cagaccgaca 1920
10  ccgcacgcct atcaatgctt aggaagcggg tggcaaaaaa tgggaaggat cccacaagga 1980
   gaaatcgtgt gggacaacga ctggatcaac cgcacgttta aagcggaaaa tttccatatt 2040
   cagggcgggc aggcgggtgat ttcccgcaat gttgccaaag tgggaaggcg ttggcatttg 2100
   agcaatcacg cccaagcagt ttttgggtgc gcaccgcac aaagccatac aatctgtaca 2160
   cgcttcgctt ggacgggtct gacaaattgt gcgcaaaaaa ccattaccga cgataaagtg 2220
15  attgcttcat tgactaagac cgacatcagc ggcaatgtca gccttgccga tcacgctcat 2280
   ttaaatctca cagggccttg cactctcaac ggcaatctta gtgcaaatgg cgatacacgt 2340
   tatacagtcg gccacaacgc cacccaaaac ggcaacctta gcctcgtggg caatgcccaa 2400
   gcaacattta aacacggcgc attaaacggc aacacatcgg cttcggggca tgcttcattt 2460
   aatctaagca acaacgcgcg acaaaacggc agtctgacgc tttccgacaa cgctaaggca 2520
20  aacgtaagcc attccgcact caacggcaat gtctccctag ccgataaggc agtattccat 2580
   tttgaaaaca gccgctttac cggacaactc agcggcagca aggatacagc attacactta 2640
   aaagacagcg aatgacgct cgcgtcaggg caaggaattag gcaatttaaa ccttgacaac 2700
   gccaccatta cactcaattc cgcctatcgc cagatgctg cagggcgcga aaccggcagt 2760
   gtgtcagaca cgccgcgcgc ccgttcgcgc cgttccctat tatccgttac accgccaaat 2820
25  tcggtagaat cccgtttcaa cagcgtgacg gtaaacggca aattgaacgg tcaaggaaac 2880
   ttccgcttta tgtcggaact cttcggctac gaaagcgaca aattgaagct ggccgaaaat 2940
   tccgaaggca cttacacctt ggcggtcaac aataccggca acgaaccctg aagcctcgat 3000
   caattgacgg tagtggaagg gaaagacaac aaaccgctgt ccgaaaaact taatttcacc 3060
   ctgcaaaacg aacacgtcga tgccggcgcg tggcggttac aactcatccg caaagacggc 3120
30  gagttccgcc tgcataatcc ggtcaaaaga caagagcttt ccgacaaact cggcaaggca 3180
   gaagccaaaa aacaggcgga aaaagacaac gcgcaaaagg ttgacgcgct gattgcgggc 3240
   gggcgcgatg ccgcccgaaa gacagaaagg gttgccgaac cggcccgcca ggcaggcggg 3300
   gaaaaatgtc gcattatgca ggcggaggaa gagaaaaaac ggggtgcagg ggataaagac 3360
   agegccttgg cgaacacagc cgaagcgga acccgccgg ctaccaccgc cttccccgcg 3420
35  gccgcgcgcg ccgcgcggga tttgcccga ccgcagcccc aaccgcaacc tcaaccccaa 3480
   ccgcagcgcg acctgatcag ccgttatgcc aatagcgggt tgagtgaatt ttccgccacg 3540
   ctcaacagcg ttttcgcgt acaggacgaa ttggaccgcg tgtttgccga agaccgcgcg 3600
   aacgcgcttt ggacaagcgg catccgggac accaaacact accgttcgca agatttcgcg 3660
   gcctaccgcc aacaaaccga cctgcgccaa atcggtatgc agaaaaacct cggcagcggg 3720
40  cgcgtcggca tctctgtttt gcacaaccgg accgaaaaac ccttcgacga cggcatcgcc 3780
   aactcggcac ggcttgccca cggcgccgtt ttcgggcaat acggcatcgg caggttcgac 3840
   atcggcatca gcacgggcgc ggggttttag agcggcagtc tttcagacgg catcggaggc 3900
   aaaatccgcc gccgcgtgct gcattacggc attcaggcac gataccgcgc cgttttcggc 3960
   ggattcggca tcgaaccgta catcggcgca acgcgttatt tgcgtccaaa agcggattac 4020
45  cgctacgaaa acgtcaatat cgccaccccc ggtcttgct tcaaccgcta ccgcgcgggc 4080
   attaaggcag attattcatt caaacccggc caacacattt ccatcacgcc ttatttgagc 4140
   ctgtcctata ccgatgccgc ttccgggcaa gtccgaacac gcgtcaatac cgccgtattg 4200
   gctcaggatt tcggcaaaac ccgcagtcgc gaatggggcg taaacgccga aatcaaaggt 4260
   ttcacgctgt cctccacgc tgccgcggcc aaaggcccg aactggaagc gcaacacagc 4320
50  gcgggcatca aattaggcta ccgctggtaa

```

<212> Type : DNA

<211> Length : 4350

SequenceName : SEQ ID 620

SequenceDescription :

55

Sequence

-----

<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491

<400> PreSequenceString :

```

60  atgaacaccc ttcaaaaagg ttttaccctt atcgagctga tgattgtgat tgccatcgtc 60
   ggcatttttg cggcagtcgc ccttctgtct tatcaagact acacagcccg cgcacaagtt 120
   tccgaagcca tctcttttag cgaagggtcaa aaatcagccg tcaccgagta ttacctgaat 180
   cacggcgaat ggcccagcaa caacacttct gccggcgttg catcctccac cgacattaaa 240
   ggcaaatatg ttcaaaagcg tgaagtcaaa aacggcgtcg ttaccgccac aatggcttca 300
65  agcaacgtaa acaacgaaat caaaggcaaa aaactctccc tgtggggcaa gcgtcaagac 360
   ggttcggtaa aatggttctg cggacagccg gttaaagcga acgacaccgc caccaccaac 420
   gacgacgtca aagccgacac cgccgccaac ggcaagcaga tcgacaccaa gcacctgccc 480

```

```
tcaacctgcc gcgacgcagc atctgccgga taa 513
<212> Type : DNA
<211> Length : 513
    SequenceName : SEQ ID 621
5    SequenceDescription :

Sequence
-----
<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
10 <400> PreSequenceString :
    atgcaagcac ggctgctgat acctattcct ttttcagttt ttattttatc cgctgcggg 60
    aactgacag gtattccatc gcatggcgga ggtaaacgct ttgcggtcga acaagaactt 120
    gtggccgctt ctgccagagc tgccgttaaa gacatggatt tacaggcatt acacggacga 180
    aaagtgtcat tgtacattgc aactatgggc gaccaagggt caggcagttt gacagggggg 240
    cgctactcca ttgatgcact gattcgtggc gaatacataa acagccctgc cgtccgtacc 300
15 gattacacct atccacgtta cgaaaccacc gctgaaacaa catcaggcgg tttgacaggt 360
    ttaaccactt ctttatctac acttaatgcc cctgcactct cgcgcaccca atcagacggg 420
    agcgggaagta aaagcagtcct gggccttaaat attggcggga tgggggatta tcgaaatgaa 480
    accttgacga ctaaccgcgc cgacactgcc tttctttccc acttggtaca gaccgtattt 540
20 ttcctgcgcg gcatagacgt tgtttctcct gccaatgccg atacggatgt gtttattaac 600
    atcgacgtat tcggaacgat acgcaacaga accgaaatgc acctatacaa tgccgaaaca 660
    ctgaaagccc aaacaaaact ggaatatctc gcagtagaca gaaccaataa aaaattgctc 720
    atcaaaccaa aaaccaatgc gtttgaagct gcctataaag aaaattacgc attgtggatg 780
    ggaccgtata aagtaagcaa aggaattaaa ccgacagaag gattaatggg cgatttctcc 840
25 gatatccaac catacggcaa tcatatgggt aactctgcc catcctaga ggctgataac 900
    agtcatgagg ggtatggata cagcgatgaa gcagtgcgac gacatagaca agggcaacct 963
    tga
    <212> Type : DNA
    <211> Length : 963
30    SequenceName : SEQ ID 622
    SequenceDescription :

Sequence
-----
35 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgcgcccac tcttcctatc tttcgtttta ttcctatatt tgataaccgc ctgcagcaca 60
    ccggacaagt ctgcccgatg ggaaaatatc ggcacaatct caaacggcaa tattcataca 120
    tatatcaata aagacagcgt gagaaaaaac ggaaatctga tgattttcca agataaaaaa 180
40 gttgttacca atctaaaaca agaacgtttt gccaacaccc ccgcatacaa gactgccatt 240
    gccgagtggg aatccactg caacaacaaa acataccgct taagttcgct acaattgttt 300
    gatacaaaaa acacggaaat ttccacacaa aactacacag cctcttcct ccgcccgatg 360
    agcatcctgt ccgggacatt aaccgaaaaa caatatgaaa ccgtatgcgg aaaaaaactc 420
    tga 423
45 <212> Type : DNA
    <211> Length : 423
    SequenceName : SEQ ID 623
    SequenceDescription :

50 Sequence
-----
    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgaacaaac ttttcattac cgccctgtcc gccctgcct tgtcgcctg cgccggcact 60
55 tgggagggcg cgaaacaaga caccgcccgc aaccttgaca aaacacaggc cgccgccgaa 120
    cgccgccgag aacaaacagg caacgccgct gaaaaaggct gggacaaaac caaagaagcc 180
    gtcaaaaaag gcggcaatgc cgtcggacgc ggcatttccc atctcggcgg aaaaatcgaa 240
    aacgccaccg aataa 255
    <212> Type : DNA
60 <211> Length : 255
    SequenceName : SEQ ID 624
    SequenceDescription :

Sequence
-----
65 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
```

```

atgaaactcc tcttcatccc cctagtcctc ttcgtcgccg tcgaacattt ctacatcgcc      60
tggcttgaaa tgacgcagat tcccagcgaa aaagcggcgg aaacgttcaa gctgccttat      120
gaattttatgg aacaaaatcg cgtgcagacc ctgttcggca accaagggtt gtataacggc      180
tttctcggca tcgggctggg gtgggtcgcg tttgcccgtc cggataacgc ggtgtacggc      240
5 gcaacggtac tgtttctcgg ctctcgtcctg attgccgcgc cgtggggcgc gttctcttcc      300
ggcaacaaag gcatactcgt caaacaaggt ttgcccgcac ttttggcagc ggcggcgggtg      360
ttggcggtat ga
<212> Type : DNA
<211> Length : 372
10 SequenceName : SEQ ID 625
SequenceDescription :

Sequence
-----
15 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atggcttcaa gcaacgtaaa caacgaaatc aaagacaaaa aactctccct gtggggccaa      60
cgtcaagacg gttcggtaaa atgggttctgc ggacagccgg ttaagcgca cgcgccacc      120
gacgccgacg tcaccgcca cagcggcaac gaaatcgaca ccaagcacct gccgtcaacc      180
20 tgccgcgacg cagcatctgc cgtttgcaca aaaaaccccg agtattacc gaatcacggc      240
gaatggccga aaaacttcgt cattcccgcg caggcgggaa tccaggtctg tcggcacgga      300
aacttatcgg gtaaaaaggt ttctccggtc ctgagttcta gattcccact ttcgtgggaa      360
tga
<212> Type : DNA
<211> Length : 363
25 SequenceName : SEQ ID 626
SequenceDescription :

Sequence
-----
30 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atccttttag ccgaagggtca aaaatcagcc gtcaccgagt attacctgaa tcacggcgaa      60
tggcccagca acaacacttc tgccggcggtg gcaacctcca ccgacattaa aggcacaaat      120
35 gttcaaaagc ttgaagtcaa aaacggcgtc gttaccggca caatggcttc aagcaacgta      180
aacaacgaaa tcaaaggcaa aaaactctcc ctgtgggcca agcgtcaaga cggttcggta      240
aaatggttct gcggacagcc ggttaagcgc aacgacaccg ccaccacca cgcgcgcgtc      300
aaagccgaca ccgcccga cggcaagcag atcgacacca agcacctgcc gtcaacagca      360
tcgacaagaa aatcgacacc aaactag
40 <212> Type : DNA
<211> Length : 387
SequenceName : SEQ ID 627
SequenceDescription :

Sequence
-----
45 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atgcccattc ccttttaaacc cgtattgggt gccgcgcgca tcgcccgaagc gtttcccgc      60
50 tttgcccagc accccgcgcc gcagtccgcc caaacgctga acgaaatcac cgttacccgc      120
acgcacaaaa cccaaaaaact cggcgaagaa aaaatccgcc gcaaaaacttt agacaagctc      180
ttggtcaacg acgaacacga cctggtgcgc tacgaccccgc gcatttcogt cgtcgaaggc      240
ggcagggcgg gttctaaccg ctttaccata cgcggcggtg acaaagaccg cgtcgccatc      300
aacgttgacg ggctggcgca ggcggaaagc cgtctcttcg aagccttcca agaattgttc      360
55 ggcgcgtacg gcaacttcaa cgccaaccgc aacacttccg agccggaaaa cttttccgaa      420
gtaaccatca ccaaaggcgc ggactcgctc aaatccggca gcggcgcat gggcggcgca      480
gtcaattacc aaaccaaata cgcaagcgat tatgtttccg aagacaagcc ctaccatttg      540
gggataaagg gcggcagcgt cggcaaaaac agccaaaaat tcagcagcat caccgcgcgc      600
ggcaggctct ttggtttgga tgccttattg gtttataccc gccgcttcgg caaagaaacc      660
60 aaaaaccgct cgaccgaggg cgatatcgaa attaaaaacg acggatatgt ctataaccgc      720
accgatacag gcggaccacg caagtacctg acctatgtag ccacaggggt tcgcgcgtcc      780
caacccgacc cgcaagaatg ggtaaacaaa agcaccctgt tcaagctggg ctacaacttc      840
aacgatcaaa accgtatcgg ctggattttt gaagactcgc gcaccgaccg ttttaccac      900
gagctgtcta atttgtggac ggttacgacc acgtctgccc caacgggcga ctaccgccac      960
65 cgccaagacg tgagctaccg ccgccgctcc ggtgtcgaat acaaaaacga attggaacac      1020
ggcccgtggg acagccttaa gctgcgctac gacaagcagc gcacgatat gaacacttgg      1080
acttgggaca tcccgaaaaa ttacgataaa agaggcatca acggcgaggt ttaccattcg      1140

```

```

5      ttcggcata tccgccaaaa caccgcgcaa tggactgccg attttgaaaa acaactcgac 1200
      ttttccaaag ccgtttgggc ggcgcaatac ggcttgggcg gcggcaaaagg ggacaatgcc 1260
      aactcggatt acagctatatt cgaaaaactg tacgacccca aaatcctcgc ttccaaccaa 1320
      gccaaaaatca caatgctgat cgaaaaacgg tcgaaatata aatttgcta ttggaacaat 1380
10     gcggtttcact tggggcggcaa cgaccgcttc cgctgaatg cgggcatacg ctacgacaaa 1440
      aacagcagca gcgcgaaaaga cgatccgaaa tacaccaccg ccatccgggg gcagattccc 1500
      catttgggtt cggaacgcgc gcacgcgggc ttcagctacg gcacgggggt cgactggcgg 1560
      tttaccaagc atctgcactt gttggcaaaa tacagcacgg gcttccgcgc accgacttgc 1620
      gacgaaactt ggctactgtt cccacacccc gatttctacc tgaaagccaa cccaaacctg 1680
10     aaagccgaaa aagccaaaaa ctgggaattg ggtctggcgg gcacgggcaa agcgggcaac 1740
      ttcaagctct cgggcttcaa aaccaaatac cgcgacttta tcgaattgac gtatatgggc 1800
      gtttcgctcag acgataaaaa caaccccaga tacgcccgcg tttcagacgg tacggcattg 1860
      gtcagctcgc ccgttttgca aaaccaaacc cgctccgcgc cctgggtgaa aggcataagag 1920
      tttacaggca cgtggaacct cgacagtatc ggtttgcca aagggctgca caccggcctc 1980
15     aacgtcagct acatcaaggc caaggcaacg caaaacaacg gcaagaaaac gcccatcaac 2040
      gcgctttcgc cgtggacggc gggttacagc ctgggctatg acgcgccttc caaacgctgg 2100
      ggcatacaac cctacgccac gcgcaccgcc gccaaaaagc cgtccgacac cgtccacagc 2160
      aacgacgact tgaacaaccc gtggccttat gccaaacaca gcaaggccta tacgctgttc 2220
      gacctttccg cctacctcaa catcggcaaa caggttacgc tccgcgcgcg cgcgtaaac 2280
20     attaccaaca agcagtacta cacttgggaa cttttacgca gcatccgcga gttcggcagc 2340
      gtaaccgcgc ttgacaacaa aaccacgcc ggcatacaac gctttacctc gccgggcagg 2400
      agctacaatt tcaccatcga agcgaagttc taa 2433

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2433

25 SequenceName : SEQ ID 628

SequenceDescription :

Sequence

-----

30 &lt;213&gt; OrganismName : Neisseria meningitidis serogroup A strain Z2491

&lt;400&gt; PreSequenceString :

```

35     atgaaaaaat ccctgattgc cctgactttg gcagcccttc ctgttgacgc aatggctgac 60
      gttaccctgt acggcaccat caaaaccggc gtagaaactt cccgctctgt agaacacaat 120
      ggaggctcagg tggttagcgt tgaaccgggt accggcatcg ttgatttggg ttcgaaaaatc 180
35     ggcttcaaag gccaaagaaga cctcgtaaac ggcctgaaag ccatttggca ggttgagcaa 240
      aaggcatcta tcgccggcac tgactccggt tggggcaacc gccaatcctt catcggcttg 300
      aaaggcggct tcggtaaatt gcgcgtcggc cgtttgaaca gcgtcctgaa agacaccggc 360
      gacatcaatc cttgggatag caaaagcgac tatttgggtg taaacaaaat tgccgaaccc 420
      gaagcacgcc tcatttccgt acgctacgat tctcccgaat ttgccggcct cagcggcagc 480
40     gtacaatacg cgcttaacga caatgtaggc agacataaca gcgaatctta ccacgccggc 540
      ttcaactaca aaaacggcgg cttcttcgtg caatatggcg gtgcctataa aagacatcag 600
      gatgtggatg acgtgaagat tgagaaatac cagattcacc gtttggctag cggttacgac 660
      aatgattgcc tatacgtctc cgtagccgta cagcaacaag acgcgaaact ggttgaagac 720
      aattcgcaca actctcaaac cgaagttgcc gctacettgg cataccgctt cggcaacgta 780
45     acgccccgcg tttcttacgc ccacggcttc aaaggctcgg ttgatgatgc aaaacgcgac 840
      aatacttacg accaagtggg tgtcgggtgc gaatacgact tctccaaacg cacttctgcc 900
      ttgggtttctg ccggttgggt gcaagaaggc aaaggcgaaa acaaatcgt agcgactgcc 960
      ggcggtgtcg gtctgcgcca caaattctaa 990

```

&lt;212&gt; Type : DNA

50 &lt;211&gt; Length : 990

SequenceName : SEQ ID 629

SequenceDescription :

Sequence

-----

55 &lt;213&gt; OrganismName : Neisseria meningitidis serogroup A strain Z2491

&lt;400&gt; PreSequenceString :

```

60     atgaaaaccc tgctcctcct catccccctc gtccctcacag cctgcggcac actgaccggc 60
      ataccggccc acggcggcgg caaacgcttt gccgtcgaac aagaactcgt cgccgcatcg 120
60     tccgcgcgcg ccgtcaaaga aatggacttg tccgccctga aaggacgcaa agccgccctt 180
      tacgtctccg ttatgggcga ccaagggttc ggcaacataa gcggcggacg ctactctatc 240
      gacgactga tacgcggcgg ctaccacaac aaccccgaaa gtgccaccca atacagctac 300
      cccgcctacg acactaccgc caccacaaa tccgacgcgc tctccagcgt aaccacttcc 360
      acatcgcttt tgaacgcccc cgcccgccgc ctgacgaaaa acagcggacg caaaggcgaa 420
65     cgctccgcgc gactgtccgt caacggcacg ggcgactacc gcaacgaaac cctgctcgcc 480
      aaccccgcg acgtttcctt cctgaccaac ctcatocaaa ccgtcttcta cctgcgcggc 540
      atcgaagtcg taccgcccga atacgcccac accgacgtat tcgtaaccgt cgacgtattc 600

```

```
ggcaccgtcc gcagccgcac cgaactgcac ctctacaacg ccgaaaccct taaagcccaa 660
accaagctcg aatatttcgc cgttgaccgc gacagccgga aactgctgat tgcccoctaaa 720
accgccgcct acgaatccca ataccaagaa caatacgccc tctggatggg accttacagc 780
gtcgggcaaaa ccgtcaaagc ctcagaccgc ctgatggctg atttctccga catcaccccc 840
5   tacggcgaca caaccgcccc aaaccgtccc gacttcaaac aaaacaacgg taaaaaaccc 900
gatgtcggca acgaagtcac ccgccgcgcg aaaggaggat aa 942
<212> Type : DNA
<211> Length : 942
SequenceName : SEQ ID 630
10   SequenceDescription :

Sequence
-----
<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
15   <400> PreSequenceString :
atgaataaaa ccttgtctat ttgtccggtg gcaatcttac tggcgcgctg cgccgcgggg 60
ggcggtaaca cattcggcag cttagaccgc ggcacaggtg tggcgcgag catcgtcaaa 120
atggcggtag aaagccaatg ccgtgcggaa ttgaacaaac gcagcgaatg cgttttgacc 180
gcgctggcga tgagtgcga aaaacaggcg gaatgggaaa acaagatttg cgttgcgctc 240
20   gcccaagaag caccacaacca gctgaccggc aacgatgtga tgcagatgct ggatccgtcc 300
acgcgcaatc aggcacttgc cgccctgacc gccaaaacgg ttccgcctg cttcaaacac 360
ctgtaccgct aa 372
<212> Type : DNA
<211> Length : 372
SequenceName : SEQ ID 631
25   SequenceDescription :

Sequence
-----
30   <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atgaatccac ttattcatca agcaaaggaa tcatctatgc aaaccgcgat cctctccgcc 60
gtactgctgg ctttttcaac cgctgccttt gccggggggcg cattcacgct gcaattcgac 120
aaccgcgtccg aagacggcgg cttcacgcaa aaccagattt tgagcgcgcc ttacggcttt 180
35   ggctgttcgg gcggcaatgc ttcccgccgc ctgctgtgga aaaatccgcc cgccgggaca 240
aaaagtttcg tctgaccgt ttacgataaa gacgcgcga ccggactggg ctggatgcac 300
tggttggtcg ccgacattcc cgccgatgtc cgccgcgca atgcgacctc gctgcaatta 360
agccgctgcg ccagcatcgc cgacgaccag tccgcagcca tatcggcagt aatcagtttg 420
cagattttgc ccacaggtt gacgccttgc tacacggcaa aaccgatgcc gtcagtctgc 480
40   aaccacgcca acacgcgcga aagcgcgggc tccgcgcgat tgtcgggcac ttcttcatcc 540
gtcagcaccc cgccgcata a
561
<212> Type : DNA
<211> Length : 561
SequenceName : SEQ ID 632
45   SequenceDescription :

Sequence
-----
50   <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atgaataaaa ctttaaaaag gcgggttttc cgccataccg cgctttatgc cgccatcttg 60
atgttttccc ataccggcgg gggggggggg gcgatggcgc aaaccgctca atacgctatt 120
atcatgaacg agagaaacca gcccagggtg cagtggatg ggtcatattc aataaaggac 180
aaagacagga agcggaata tactcatcat aatcaccaac aaggaggaag ctctgtctca 240
55   ttcaacaata gcgatgagct tgtttctcga caaagcggtg ctgccgtttt tggcacagcc 300
acctacctgc cgccctacgg caaggtttcc ggttttgatg ccgcgctct gaaagagcgc 360
aacaatgccg tcgattggat tcataccacc caccagggtt tgataggcta cagctacgac 420
ggtgtcgtat gcagaagcgc cacagactgt cccaaacttg tctataaaac ccgattttcc 480
60   ttcgataatc ccgacttggc aaaaacagga ggcgggttgg ataagcacac agagccaagc 540
cgcgacaatt cgccatttta caaatgtgaag gatcatccat ggttggcgct gtctttcaat 600
ttgggtgccc aggttatcgc caaaaatggg aagacaatca acaaattggt atcttctttt 660
aatgaaaaga atagtaataa caacctcgtc tataccacgg aaggccgcga tatttccttg 720
ggcaactggc agcgcgaaac gaccgcatg gcctattatc tgaacgcaa gctgcacctg 780
ctggataaaa aacagattca aaatatcacc gacaaaacag tgcagttggg tgtcttgaag 840
65   ccgagcatcg atgtgcggac aagaaatacg gggactgccg gcattctatc ttattgggct 900
aagtgggaca ttaaagatac cgggcagatt ccagtcaagc tcagcttgac gcaagtcaaa 960
gcaggccgct gcgtcaacaa agataacccc aataagaata ccaaaacctc ttccccgcga 1020
```

```
ctgactgcc cccgctgtg gttcggagct gggcaagatg gtaaggcggga gatgtattcc 1080
gcttcggttt ccacctaccc cgacagttcg agcagccgca tottccttca aaatctgaaa 1140
agaaaaaccg acaccagcag acccggccgc tattccctcg caaccttgaa taagtccgat 1200
attgaaagtc gagagccgag ttccacaagt cggcaaaaccg tcatccgatt ggatggcggc 1260
5 gtacagcaga tcaaactgga tagaaacaat actgagggtca ctgggttttaa tggaaatgac 1320
ggcaaaaacg acactttcgg cattgttagt gaaggagct tcatgcctga tgcagcggag 1380
tggaaaaaag tattgctgcc ttggacggtt cgtgctttca attatgacgg tcgatttaac 1440
acagtcaaca aagaagaaaa caacggcaag ccaaaataca gtcaaaaata ccgagccgc 1500
aacaacggca agcacgagcg caatttgggc gacatcgtca acagcccat cgtggcggtc 1560
10 ggcgagtatt tggctacttc cgccaacgac gggatgggtg atatcttcaa acaaaaggcg 1620
ggggacaagc gcagctacaa tctgaagctc agctacatcc ccggcacgat gccgcgcaag 1680
gatattgaaa gcaagagactc cacccttgcc aaagagctgc gcgcctttgc cgaaaaaggc 1740
tatgtggcg accgctacgg cgtggacggc ggctttgtct tgcgcgcgat tacagatgac 1800
cagcagcagc aaaaacactt ctttatgttc ggcgcaatgg gccttgccgg cagaggcgca 1860
15 tacgccttgg atttgaccaa agccgacgac aatgaccgca caaaagcctc tttgtttgat 1920
gtaaaagata acgggaataa tggcaataac gcgtggaatt aggctacacc 1980
gtcggcacgc cgcaaatcgg caaaaccac aacggcaaat acgcccctt cctgcctcc 2040
ggttatgcga ctaaacagat tgacagcggc gagaataaaa ccgcgctgta tgtgtatgat 2100
ttggaagca acaacggtac gctgattaga tggacggca cggtcgatat cgcctatgcc 2160
20 ctttcgtccc ccacgctggt ggataaagat gatttaagcg gcaacaaccc gaacagttgg 2220
ggcgatcgcg gcggcaagat gtaccgcttt gatttaagcg gcaacaaccc gaacagttgg 2280
actgtacgca ctattttcca aggcacgaag ccgattactt ccgcgcgcgc catttcccaa 2340
ctgaagagca aacgcgtggt tatcttcggt accggcagtg atttgagtga ggatgatgta 2400
25 ctacgtacgg atgaacaaca tatttcaggt attttgaca atgacacaaa cacgggtacg 2460
gcgcaagagg ggctgggcaa agggctgctc gagcaaaagc ttagtgagga aaataaaaacc 2520
ttattcctga ccgattataa gcgatccgac ggctcggcg acaagggctg ggtagtgaaa 2580
ttgaaggagc gacagcgcgt tacgtcaaa ccgaccgtgg tattgcgtac cgcctttgta 2640
accatccata aatatacggg taatgacaaa tgcggcgcgg aaaccgcoat tttgggcatc 2700
aataccgcgc acggcggcaa gctgaccaag aaaagcgcgc gcccgattgt gccggcagcc 2760
30 aattcgaagg tcgcgcaata ttccggcgat aagaaaactt ccagcggcaa atccatccct 2820
ataggttgta tggaaaaaga cgggggaacc gtctgccga acggatatgt ttacgacaaa 2880
ccggttaatg tgcgtacct ggacgaaaag aaaacagacg gattttcaac aacggcagac 2940
ggcgatgcgg gcggcagcgg aacattcaaa gagggtaaaa aaccgcgccg caataaccgg 3000
35 tgccttctcg gaaaaggggt gcgcaccctg ctgatgaacg atttggacag cttggatatt 3060
accggcccg tgtgcggtat gaaacgaatc agctggcgtg aagtcttcta ctga 3114
```

<212> Type : DNA

<211> Length : 3114

SequenceName : SEQ ID 633

SequenceDescription :

Sequence

-----

<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491

<400> PreSequenceString :

```
atgaaacacc ccaaactcac cttatcgcc gcattgctga ccactgccgc aactgccgcc 60
cccctgccgg ttgtaaccag cttcagcatt ttaggcgacg tagccaaaca aatcgccgga 120
gagcgcgtat ccatacaaaag tttggctcgg gccaaccaag atacgcacgc ctatcatatg 180
accagcggcg acattaaaaa aatccgcagt gcaaaactcg tcttgattaa cggcttagga 240
50 cttgaagctg ccgacatcca acgtgccgtc aaacagagca aagtatccta tgcgaagcg 300
accaaaggca tccaaccctt caaagccgaa gaagaaggcg gacaccatca cgaccagat 360
catgaccacg accatgacca cgaaggacac caccagacc acggcgaata tgacccac 420
gtctggaacg acccgtcct tatgtccgcc tatgcccata acgtcccgga agcctgata 480
aaggccgacc ccgaaggcaa agtttattat caacaacgct tgggcaacta ccaaatgcag 540
55 ctcaaaaaac tgcacagtga cgcacaagcc gcatttaatg ccgtccctgc cgccaaacgc 600
aaagtcttga cggggcagca tgccttttcc tatatgggca aacgttacca tatcgaattc 660
atcgcccccac aaggtgtgag cagcgaagcc gagccttcag ccaaaacaagt cgccgccatc 720
atccgacaaa tcaaacgcga aggcatacaa gccgtattta ccgaaaatat caaagacacc 780
cgcatggttg accgcacgc caaagaaacc ggtgtcaacg tcagcggcaa actgtattcc 840
60 gacgcactcg gcaacgcacc cgcagacacc tacatcgcca tgtaccgcca caacatcaaa 900
gccttaacca acgcatgaa gcaataa 927
```

<212> Type : DNA

<211> Length : 927

SequenceName : SEQ ID 634

SequenceDescription :

Sequence

```

-----
<213> OrganismName : Streptococcus pyogenes strain MGAS8232
<400> PreSequenceString :
5  atgaaaaaaa gaattttatc agcagttctt gtaagtgggtg ttaccctcgg agcagctaca      60
   actgtaggag cggaggattt gactactaag attgctaagc aggattctat tatctcaaat      120
   ctgactacag agcaaaaagc tgcacagaat caagtttcag cgttacaggc tcaagtaagt      180
   tcactacaat ctgaacaaga taaactgacc gcaagaaata cagaacttga ggcactttca      240
   aagcgatttg agcaagaaat taaggctcta acaagtcaaa ttgttgctcg taatgaaaaa      300
   ttaaaaaatc aagctcgtag tgcttataaa aacaatgaaa cttctgggta cattaatgca      360
10  cttttgaatt ctaaatcaat ttctgatgtt gtaaaccgtt tagtagcaat taatagagct      420
   gtctctgcta acgttaaatt gttagaacaa caaaaagctg ataaagtttc ccttgaagaa      480
   aagcaagctg ctaaccaaac agctattaat accattgccc ctaatatggc aatggctgaa      540
   gaaaaccaaa atacattacg tactcaacaa gctaatttgg aagctgcaac tgcaaattta      600
   gctctccaat tagcatctgc tactgaagat aaagctaatt tggtagctca aaaagaagct      660
15  gcagaaaaag ctgctgctga agccttagca caagaacagg ctgctaaagt taaggcacaa      720
   gaacaggctg cacaacaagc agcatctgtt caagcagcaa aatctgctat tactccagca      780
   ccacaagcta ctccggcagc gcaaagtagt aatgctattg aaccagctgc actcacggct      840
   ccggcagctc cttctgcaag accacaacaa tcatatgatt cttctaatac ttatccagtt      900
   ggacaatgca catggggagc taaatcttta gctccttggg caggaaataa ttggggaaat      960
20  ggtggtcaat gggcttatag tgctcaagca gctgggtatc gtactgggtt aacgccgatg     1020
   gtaggtgcga ttgccgtttg gaacgatggt ggttatggac atgtcgccgt tgtagttagag     1080
   gttcaaaagt cctcaagtat tcgtgtgatg gactctaact acagtggtag acagtacatt     1140
   gctgatcacc gtggttggtt taatccaaca ggtgttacat ttatttatcc acactaa      1197

25  <212> Type : DNA
    <211> Length : 1197
        SequenceName : SEQ ID 635
        SequenceDescription :

30  Sequence
    -----
    <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
35  gtgattacaa ttaaaaatcc aaaaatcctt aagtggctaa agtatgtatt aagtgcatt      60
   cttagcctta ttatccttgt tattattatt ggtggctctt tgtttacctt ctacattagc      120
   agtgcctcga aactgtcaga agcccagtta aaatcaacaa actctagctt ggtttatgac      180
   ggtaataaca atctgattgc tgatttgggt tctgaaaagc gtgaaaatgt aacagctgat      240
   agtatcccta ttaatctagt taatgctatt acctcaattg aagataaacg tttctttaac      300
   catcgctggg tagatcttta tcgtattttt ggtgctgcct ttcataatct aacgagtcag      360
40  accactcaag ggggggtcaac gcttgatcag caactcatta aactagccta tttttctact      420
   aatgaatctg atcaaacctt aaaacgtaag gctcaagaag tttggcttgc tcttcaaatg      480
   gagcgaaaat atactaaaca agaaatcctg actttttaca tcaacaaagt atatatgggt      540
   aatggcaact atggtagctg gacagccgct aagtcctatt atggcaagga tcttaaggat      600
   ttatccttatg cccagtagc cctattgggt ggaatccctc aagctcctag tcaatatgat      660
45  ccttaccttc atcctgaagc tgctcaaaat cgccgtaacg tcgtgttgca acagatgtac      720
   atggaaaaac atctgacgaa agcagaatat gaaactgcca tcgcaactcc cgtcgctgaa      780
   ggtctacaat cactccaaca gcgctcaact tatccaaaat atatggataa ttatctaaaa      840
   caagttattg aagaagtcaa aaaggaaaacg aataaagata tttttaccgc tgggttaaaa      900
   gtttatacca atattatccc cgatgcgcag cagactcttt ataataattt tcatcttggt      960
50  gattatgttt actatccaga ccaagatttc caagttgctt caacgattgt tgatgtgaca     1020
   aatggctcatg ttattgctca gcttggcgga cgtaatcagg atgaaaatgt ttcatattggg     1080
   actaaccaag ctgttttaac tgatcgtgac tggggttcta ccatgaagcc aatcacagcc     1140
   tatgctcctg ctattgaatc tgggtgtttat acttctactg ctacgtcgac taatgactca     1200
   gtctattatt ggcctggaac cactacccaa ttgttttaact gggaccttag atataacgga     1260
55  tggatgacaa tccaagctgc tattatgcta tcgcgaaatg tcccagcagt ccgagcactg     1320
   gaagccgcag gacttgacta tgctcgatct ttcttaagca gtttaggtat taactatccc     1380
   gaaatgcact actcaaacgc tatctcaagt aataacagta gctcagataa aaaatatggt     1440
   gcaagtagtg aaaaaatggc cgctgcatac gctgcttttg caaatgggtg tatttatcat     1500
   aaaccaaggt atgtcaataa agtgggaattt agttaggtga caagtaaaac atttgatgaa     1560
60  aaaggaaaaa gtgccatgaa agaaaccacg gcttatatga tgacagatat gttgaaaaact     1620
   gttctcactt atgggtacagg tactgctgct gccattcctg gtgttgcgca agctggtaaa     1680
   acagggactt ctaactacac tgatgaggaa ctagctaaaa ttggtgaaaa atacggcctt     1740
   tatccagatt atgttgggtac attagcgcca gacgaaaact ttgttggctt tactaagcgc     1800
   tacgccatgg ctgtttggac aggttacaaa aaccgcttga cccagttata cggatcaagt     1860
65  ctagagattg catctgacgt ttatcgtagc atgatgactt acttaacaaa tgggttacagt     1920
   gaagactgga ccatgcacaa tggctctttat cgcagtgggt gattcctcta cttaaagcga     1980
   acctatgcga gcaacaccga ctataactaat tcgggtttaca acaatcttta cagcaataac     2040

```



```

acaacaacag cttctagcca aacgacttca gatgatacta gtagtagcaa tgatacaagt 2100
aattcaacca atacagacaa caatggcagc catccatcta ccgatgataa aaagacaact 2160
cattaa 2166
<212> Type : DNA
5 <211> Length : 2166
    SequenceName : SEQ ID 636
    SequenceDescription :

Sequence
-----
10 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
    atgattatta ctaaaaagag cttattttgtg acaagtgtcg ctttgtcggtt agcacctttg 60
    gtgacagcgc aggcacaaga gtggacacca cgatcgggta cagaaatcaa gtctgaactc 120
    15 gtcctagttg ataatgtttt tacttatact gtaaaatacg gtgacacttt aagcacaatt 180
    gctgaagcaa tgggaattga tgtgcatgtc ttaggagata ttaatcatat tgctaataatt 240
    gacttaattt ttccagacac gatcctaaca gcaaactaca accaacacgg tcaggcaacg 300
    actttgacgg ttcaagcacc tgcttctagt ccagctagcg ttagtcatgt acctagcagt 360
    gagccattac cccaagcacc tgccacctct caatcgactg ttccatggc accatctgcg 420
    20 acaccatctg atgttccaac gacaccatta gcatctgcaa agccagatag ttttgtgaca 480
    gcgtcatctg agctcacatc gtcaacgaat gatgtttcga ctgagttgtc tagcgaatca 540
    caaaagcagc cagaagtatc acaagaagca gttccaactc ctaaagcagc tgaacgact 600
    gaagtcgaa ctaagacaga catctcagaa gatccaactt cagctaatag gctgttctct 660
    aacgaagtg cttcagaaga agcttcttct cgcgcccgag cacaagctcc agcagaaaaa 720
    25 gaagaaacct ctcagatgtt aactgcgcca gcggcacaaa aagctgtagc tgacaccaca 780
    agtgttgcaa cctcaaacgg cctttcttac gctccaaacc atgcctacaa tccaatgaat 840
    gcagggtctt aaccacaaac agcagcggtt aaagaagaag tggcttctgc ctttggtatt 900
    acgtcgttta gtggttaccg tccaggagat ccaggagatc atggtaaagg attagccatt 960
    gactttatgg taccggttag ctctacgctt ggtgatcaag ttgctcaata tgccattgac 1020
    30 catatggcag agcgtggtat ttcatacgtt atttggaaac agcgattcta tgcgccattt 1080
    gcaagtattt acggaccagc ctatacatgg aaccccatgc cagatcgcgg cagtattaca 1140
    gaaaaccatt atgatcatgt tcatgtctcc tttaatgctt aa 1182
    <212> Type : DNA
    <211> Length : 1182
35 SequenceName : SEQ ID 637
    SequenceDescription :

Sequence
-----
40 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
    atgaaaaaga aaattctttt aatgatgagt ttaatcagtg tcttttttgc ttggcaactt 60
    actcaggcaa aacaagtctt agcagagggt aaagtgaagg tgggtgacaac tttctaccct 120
    gtttatgaat ttacaaaagg ggttatgggt aatgatggcg atgtttccat gcttatgaaa 180
    45 gcaggaacgg aacctcatga ttttgagcct tctacaaaag acattaaaaa aatccaagat 240
    gcagatgcat ttgtttatat ggatgacaat atggaaactt ggggtttctga tgtgaaaaaa 300
    tcattgacat ctaaaaaaagt gaccatcgtc aagggaaactg gtaacatgct cttggttagca 360
    ggagctggac atgacctca ccatgaggat gctgacaaaa agcatgagca taataaacat 420
    agcgaagaag gacacaacca tgcttttgac ccacacgtgt ggttgtcacc ataccgtagc 480
    50 attacggtcg ttgaaaatat tcgcgacagt ctttcaaaag cttaccaga aaaagcagag 540
    aacttcaaag ccaatgcgcg tacttatatt gaaaaattaa aagagcttga caaagactat 600
    acggcagcac tttcagatgc taagcaaaag agcttttgta cacaacacgc agcttttggg 660
    tatatggcac ttgactatgg cttgaaccaa atttctatta atggtgtcac accagatgca 720
    gaaccatcag caaaacgtat tgctactttg tcaaaatacg ttaaaaaata tggcatcaaa 780
    55 tacatttatt ttgaggaaaa tgcgtcaagt aaagtgcgaa aaaccctagc taaagaagca 840
    ggagttaaag cggctgtgct tagtccgctt gaaggtttga ctaaaaaaga gatgaaagct 900
    ggccaagatt actttacggt catgcgtaaa aaccttgaaa ccttacgctt aaccactgat 960
    gtggctggta aagaaattct tccagaaaaa gacacgacta agacagttta caatggttat 1020
    ttcaaagaca aagaagtcaa agatcgtcaa ttatctgact ggtcaggtag ctggcaatct 1080
    60 gtttaccctt atttacaaga tggactttta gaccaagttt gggactataa ggctaaaaaa 1140
    tctaaaggta aaatgacagc agccgagtac aaagattact acactactgg ttataaaact 1200
    gacgtggaac aaatcaaaat caatggtaag aaaaagacca tgacctttgt tcgtaatggg 1260
    gaaaagaaaa ccttcactta cacatacgcc ggcaagaaa tcttgacctt tccaaaagga 1320
    aatcgcggag ttcgtttcat gtttgaagct aaagaaccaa atgctggcga attcaaatat 1380
    65 gttcaattca gtgaccatgc cattgtctct gaaaagcag agcatttcca cctgtactgg 1440
    ggtggtgaca gccaaagaaa attacataaa gagttagaac attggccaac ttactacggg 1500
    tcagacttat ctggctcgta aattgcccac gaaatcaatg ctcattaa 1548

```

<212> Type : DNA  
<211> Length : 1548  
SequenceName : SEQ ID 638  
SequenceDescription :

5

Sequence

-----

&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

10	atgaaaaaat	ttcatcgttt	tttgggtctca	ggagtaatcc	ttttagggttt	taatgggtcta	60
	gtacctacta	tgccatctac	acttattttcg	caacaggaaa	atcttggttca	tgcagctggt	120
	ttagcgcata	actatccgag	taagtggaaa	aaaggcaatg	gaatcgattc	gtggaacatg	180
	tatatccgcc	aatgcacttc	ttttgcagct	tttcggtttaa	gctctgctaa	tggttttcag	240
	ttacotaaag	gctacggtaa	tgccctgcacg	tggggacata	tcgegaaaaa	tcagggttat	300
15	cctgtgaata	agacaccaag	cataggggct	atcgcttggt	ttgataaaaa	cgtttatcag	360
	tcaaatgctg	cttacgatca	tgtagcatgg	gtagctgata	tccgtggaga	cactgtcact	420
	atcgaagagt	ataattacaa	cgctggacaa	ggccctgaaa	gataccataa	gcgtcaaatt	480
	ccaaaatctc	aggtaagtgg	ttatatccat	tttaaagact	tatcatctca	gacaagtcac	540
	tcctacccaa	gacaactaaa	acacatttct	caagcttcat	ttgacccttc	tggaacttat	600
20	cactttacaa	ccagattacc	agtcaaagga	caaaccagta	tcgatagccc	tgatcttgct	660
	tactatgaag	caggtcaatc	tgtttattac	gataaagtcg	tgactgctgg	aggttatata	720
	tggttagct	acctcagttt	ttctggaaac	cgacgctata	ttcccattaa	agagcccgcg	780
	cagctgtggt	ttcaaaatga	caatacaaaa	ccttccatta	aggctcggtg	tactgttacc	840
	ttccctggcg	tttttcgtgt	agatcagctt	gttaataatt	tgatcggtta	taaagaatta	900
25	gccggaggag	acccaactcc	actaaactgg	attgatccca	caccattaga	tgaaacagat	960
	aaccaaggaa	aagtttttag	aaatcaaat	ctccgtgtgg	gtgaatattt	taccgtcact	1020
	ggtagttata	aagtattaaa	aattgatcaa	ccaagtaatg	gtatttatgt	tcaaatcgga	1080
	tctcgtggaa	catgggtaaa	tgctgataaa	gctaacaaat	tatag		1125

&lt;212&gt; Type : DNA

30

&lt;211&gt; Length : 1125

SequenceName : SEQ ID 639

SequenceDescription :

Sequence

-----

35

&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

40	atgttaaaat	ttacttcaaa	tatttttagct	actagtgtag	ctgaaacaac	tcaagttgct	60
	cctggagggt	gctgttgctg	ctgtactact	tggtgcttct	caattgctac	tggaagtggt	120
	aattctcaag	gtggtagcgg	aagtataacg	ccaggtaaat	aa		162

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 162

SequenceName : SEQ ID 640

SequenceDescription :

45

Sequence

-----

&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

50	atgggagaa	cttattctgt	tgaagcgggt	ttgacagctg	ttgataaaac	ctttggcaaa	60
	acattacaat	cggcaatccg	ttcaatcgaa	ggcttgga	agcgttcaac	cggtttttca	120
	tcggtgtctc	aaaaagctag	ttccatgttt	aaatccatgt	taggagcgaa	tttagctgga	180
	caagctatct	cggcaatgac	aaggacagtg	tcacagggcc	ttggctctat	gcttggcgag	240
	atgaatagtt	cagcgaaagc	gtggaaaact	tttgacgcta	atttagcgga	cattgggttt	300
55	ggaaaaaac	aaattttggc	agttaaaacg	gcgatgcaag	actatgcaac	taaaacaatc	360
	tactcggcat	cagatatggc	tagcacgtat	gcacagttag	cagcagttgg	cgtgaaagat	420
	accggaaagc	tcgtaaaagc	ttttggcggg	ttagctgcat	ctgctgaaaa	tccgaagcag	480
	gctatgaaat	caattagtca	gcaaatgaca	caagctgttg	gaagaccaac	agttgcatgg	540
	caagacttta	ggataatgtt	ggaacagacg	cctgcaggga	tggtctaaagt	cgctaaatct	600
60	atgggtgaaa	atccttgatga	actcgtcgcc	gatattccagg	cgggtagggt	taaaaccagc	660
	gatttttttg	aagcggtaaa	aaaagcaggc	aatgataaga	gtttccaaaa	gatggcaact	720
	gagttcaaaa	ctgttgacca	agccatcgac	ggtatgcgag	aaggcttatc	caacaaattg	780
	caaccagcgt	ttgaaaaagt	gaaccaatct	ggaattagag	cgatcgaaagc	aatcggtaaa	840
	caactcgata	aagttgatct	ttctaagttt	gctagttaac	ttgggaaatt	ccttgaagga	900
65	attaatatcg	ataaaattgt	atctaattat	tcacggcgcg	tttcatctgt	cacttcaaag	960
	gttaaagaat	tttgggacgg	tttcaaacaa	actggagcaa	ttagtgcttt	ttcaggagct	1020
	ttgcagagcg	tttggggagc	tttaaaaaat	gtcgctagcg	ccatgagcgg	agggaattgg	1080

```

aagacttttg gagcaacagt tggagggtt gttaaacacg tctctaactt cgctaaagct 1140
gtttccgatg ttttaggaaa gatggaccct ggagactaa gaagttggat agctaccttc 1200
gccgcagtag ctggagggtt taagttatct gaaaaattaa cgggacaaag cgtcattggt 1260
tcttttttgg ataaaattgg cagcaaatct ggtctctttg gaaacaaagc caaagaagga 1320
5 acagacaaag cctctaacgg cgctagaaga agcgggtggca ttattagcca aatcttcagc 1380
ggcttgggta atatcggttaa gtctgctggg acagccatat caacagctgc aaaagggtatc 1440
ggagttggta ttaaaactgc tttgtctgga atccccccct atcattag 1488

```

<212> Type : DNA

<211> Length : 1488

10 SequenceName : SEQ ID 641

SequenceDescription :

Sequence

```

15 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
atgaaaaaag gtttttttct catggttatg gtcgtgagtt tagtaatgat agcaggggtgt 60
gataagtcag caaaccctaa acagcctacg caaggcatgt cagttgtaac cagctttttac 120
ccaatgtatg cgatgacaaa agaagtatct ggagacctaa atgatgtgag gatgatccaa 180
20 tcaggtgcag gcattcattc ctttgaaccg tctgtaaatg atgtagcagc tatttatgac 240
gcggtattgt ttgtttacca ttcacatacc ttagaagctt gggcaaggga tctagacctc 300
aatttaaaaa aatcaaaggt tgatgtgttt gaagcgtcaa aacctttgac actagataga 360
gtcaaagggc tagaagatat ggaagtcaca caaggcattg accctgacg acctttatgac 420
ccacatacct ggagcgatcc cgttttagct ggtgaagaag ctgttaatat cgctaaagag 480
25 ctaggacgtt tggatcctaa acacaaagac agttacacta aaaatgctaa ggctttcaaa 540
aaagaagcag agcaactaac tgaagaatac actcaaaaat ttaaaaagggt gcgctcaaaa 600
acattcgtga cgcaacacac ggcattttct tatctggcta aacgattcgg cttgaaacaa 660
cttgggtatct cgggtatttc tccagagcaa gagccctctc ctgcgaatt gaaagaaatt 720
caagactttg tcaaagaata caacgtcaag actatttttg cagaagacaa tgtcaatccc 780
30 aaaaattgctc atgctattgc gaaatcaaca ggagctaaaag taaagacatt aagtccactt 840
gaagctgctc caagcggaaa caagacatat ctagaaaatc ttagagcaaa tttggaagtg 900
ctctatcaac agttgaagta a

```

<212> Type : DNA

<211> Length : 921

35 SequenceName : SEQ ID 642

SequenceDescription :

Sequence

```

40 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
gtggagaaaa agcaacggtt ttcccttaga aaatacaaat caggaacggt ttcggtctta 60
ataggaagcg ttttcttgat gatgacaaca acagtagcag cagatgagct aagcacaatg 120
agtgaaccaa caatcacgaa tcacactcaa caacaagcgc aacatctcac caatacagag 180
45 ttgagctcag ctgaatcaaa atctcaagac acatcacaaa tcaactccca gacaaatcgt 240
gaaaaagagc aaccacaagg tctagtctct gagccaacca caactgagct agctgacaca 300
gatgcagcac caatggctaa tacaggtcct gatgcgactc aaaaaagcgc tctctttaccg 360
ccagtcaata cagatgttca cgattgggta aaaaccaaag gagcttggga caagggtatc 420
aaaggacaag gcaagggttg cgagttatt gagacaggga tcgatccggc ccatcaaagc 480
50 atgcgcatca gtgatgtatc aactgctaaa gtaaaatcaa aagaagacat gctagcacgc 540
caaaaagccg ccggtattaa ttatgggagt tggataaatg ataaagtgt ttttgacat 600
aattatgtgg aaaaatagcga taatatcaaa gaaaatcaat tcgaggattt tgatgaggac 660
tgggaaaact ttgagtttga tgcagaggca gagccaaaag ccatcaaaaa acacaagatc 720
tatcgtcccc aatcaaccga ggcaccgaaa gaaactgtta tcaaaacaga agaaacagat 780
55 ggttcacatg atattgactg gacacaaaca gacgatgaca ccaaatacga gtcacacggt 840
atgcatgtga caggtattgt agccggtaat agcaaagaag ccgctgctac tggagaacgc 900
tttttaggaa ttgcaccaga ggcccaagtc atgttcattg gtgtttttgc caacgacgtc 960
atgggatcag ctgaatcact ctttatcaaa gctatcgaag atgccgtggc tttaggagca 1020
gatgtgatca acctgagctt tggaaccgct aatggggcac agcttagtgg cagcaagcct 1080
60 ctaatggaag caattgaaaa agctaaaaaa ccggtgtgat cagttgttgt agcagcagga 1140
aatgagcgcg tctatggatc tgaccatgat gatccattgg caataaatcc agactatggt 1200
ttggtcgggt ctccctcaac aggtcgaaca ccaacatcag tggcagctat aaacagtaag 1260
tgggtgattc aacgtctaata gacggtcaaa gaattagaaa accgtgccga tttaaacat 1320
ggtaaaagcca tctattcaga gtctgtcgac tttaaaaaa ctaagggttat 1380
65 gataaatcgc atcaatttgc ttatgtcaaa gagtcaactg atgcgggtta taaagcaca 1440
gacgttaaag ataaaattgc ttttaattga cgtgatccca ataaaacct tgcagaaatg 1500
attgcttttg ctaagaaaca tggagccctg ggagtactta tttttaataa caagcctggt 1560

```

caatcaaacc gctcaatgcg tctaacagct aatgggatgg ggataccatc tgctttcata 1620  
tcgcacgaat ttggtaaggg catgtcccaa ttaaatggca atgggtacagg aagtttagag 1680  
tttgacagtg tggctctcaa agcaccgagt caaaaaggca atgaaatgaa tcatttttca 1740  
aattggggcc taactttctga tggctattta aaacctgaca ttactgcacc aggtggcgat 1800  
5 atctactcta cctataacga taaccactat ggtagccaaa caggaacaag tatggcctct 1860  
cctcagattg ctggcgccag ccttttggtc aaacaatacc tagaaaagac tcagccaaac 1920  
ttgccaaaag aaaaaattgc tgatatcggt aagaacctat tgatgagcaa tgctcaaatt 1980  
catgtttaatc cagagacaaa aacgaccacc tcaccgcgtc agcaaggggc aggattactt 2040  
aatattgacg gagctgtcac tagcggactt tatgtgacag gaaaagacaa ctatggcagt 2100  
10 atatcattag gcaacatcac agatacagat acgtttgatg tgactgttca caacctaaagc 2160  
aataaagaca aaacattacg ttatgacaca gaatttgctaa cagatcatgt agaccaccaa 2220  
aagggccgct tcactttgac ttctcgctcc ttaaaaacgt accaaggagg agaagttaca 2280  
gtcccagcta atggaaaagt gactgttaagg gttaccatgg atgtctcaca gttcacaaaa 2340  
gagetaacaa aacagatgtc aaatgggtac tatctagaag gttttgtccg ctttagagat 2400  
15 agtcaagatg accaactaaa tagagtaaac attccttttg ttggttttta aggacaattt 2460  
gaaaaccctg cagtgcaga agagtccatt ttatgtataa aatctcaagg caaaaccggg 2520  
ttttactttg atgaatcagg tccaaaagac gatattctatg tcggtaaaaca ctttacagga 2580  
ctcgtactc ttggttcaga gaccaatgtg tcaacacaaa cgattttctga caatggtcta 2640  
cacacacttg gtacctttaa aaatgcagat ggcaaattta tcttagaaaa aaatgcccaa 2700  
20 ggaaccctt tcttgagaaa atatcaaggc ttaaaagcaa gtgtctacca tgctagtgc 2820  
aaggaacaca aaaatccact gtgggtcagc ccagaaagct ttaaaggaga taaaaacttt 2880  
aatagtgc ttagatttgc aaaatcaacg acctgttag gcacagcgtt ttctggaaaa 2940  
tcgttaacag cagtgaatt accagatggg tattatcatt atgtagtgtc ttattacca 3000  
25 gatgtggtcg gtgcaaacg tcaagaaatg acatttgaca tgattttaga ccgacaaaaa 3060  
ccggtactat cacaagcaac atttgatcct gaacacaaac gattcaaac agaaccccta 3120  
aaagaccggg gattagctgg tgttcgcaaa gacagtgtct tttatctaga aagaaaaagc 3180  
aacaaccctt ataacgttac gataaacgat agctacaaat atgtctcagt agaagacaat 3240  
aaaacatttg tggagcgaca agctgatggc agctttatct tgccgcttga taaagcaaaa 3300  
30 ttaggggatt tctattacat ggtcgaggat ttgcaggga acgtggccat cgctaagtta 3360  
ggagatcacc taccacaaac attaggtaaa acaccaatta aacttaagct tacagacggt 3420  
aattatcaga ccaaagaaac gcttaaaagt aatctgaaa tgacacagtc tgacacaggt 3480  
ctagtacaaa atcaagccca gctagcagtg gtgcaccgca atcagccgca aagccagcta 3540  
acaaagatga atcaggattt ctttatctca ccaaacgaag atgggaataa agacttcgtg 3600  
35 gcctttaaag gcttgaaaaa taacgtatat aatgacttaa cggttaacgt atacgctaaa 3660  
gatgaaccct ataaacaaac cctatctgg ccttgcaag caggcgctag tgcacagct 3720  
attgaaagta cagcctggta tggcataaca gcccgaggaa gcaaggtgat gccaggtgat 3780  
tatcagtatg ttgtgactta tcgtgacgaa catggtaaag aacatcaaaa gcagtacacc 3840  
atatctgtga atgacaaaaa accaatgatc actcaggagc gttttgatac cattaatggc 3900  
40 gttgaccact ttactoctga caagacaaaa gcccttggct catcaggcat tgtccgcgaa 3960  
gaagtctttt acttgcccaa gaaaaatggc cgtaaatgtg atgtgacaga aggtaaaagt 4020  
ggtatcacag ttagtgcaga taagatgtat atccctaaaa atccagatgg ttcttacacc 4080  
atttcaaaaa gagatgggtg cacactgtca gattattact acctgtcga agatagagct 4140  
ggtaactgtt cttttgctac cttgcgtgac ctaaaagcgg tcggaaaaaga caaagcagta 4200  
45 gttaactttg gattagactt accggtccct gaagacaaac aaatagtga ctttacttac 4260  
cttgtgcggg atcgagatgg taaaccgatt gaaaacctag agtattataa taactcaggt 4320  
aacagttcta tcttgccata cggcaaatat acggtcgaat tgttgacctg tgacaccaat 4380  
gcagccaaac tagagtcaga taaaatcggt tcctttacct tatcagctga taataacttc 4440  
caacaagtta cttttaagat gacgatgtta gcaacctctc aaataactgc ccactttgat 4500  
50 catcttttgc cagaaggcag tcgcgttagc cttaaaacag ctcaaggtca gctgatcccg 4560  
cttgaacagt cttgttatgt gcctaaagct tatggcaaaa ccgttcaaga aggcacttac 4620  
gaagtgtgtg tcagcctgcc taaaggctac cgtatcgaag gcaacacaaa ggtgaatacc 4680  
ctaccaaag aagtgcacga actatcatta cgcttgttca aagtaggaga tgcctcagat 4740  
tcaactggcg atcataaggt tatgtcaaaa aataattcac aggcctttgac agcctttgcc 4800  
55 acaccaacca agacaacgac ctcagcaaca gcaaaagccc taccatcagc ggggtgaaaa 4860  
atgggtctca agttgcgcat agtaggtctt gtgttactcg gacttacttg cgtcttttagc 4920  
cgaaaaaaat caaccaaaga ttga 4944  
<212> Type : DNA  
<211> Length : 4944  
60 SequenceName : SEQ ID 643  
SequenceDescription :  
  
Sequence  
-----  
65 <213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
<400> PreSequenceString :  
atgatgcggg cacttttttc aggtgtgtct ggtatgcaga atcatcaaac gcgcagggat 60

```

gtcattggga acaacgtcgc gaacgttaac actaccggtt ttaagcgtgg gcgtgttaat 120
tttcaagatc ttattttctca gcaactgagt gcggtctgcgc gtccgaatga agaagttgga 180
ggagtgaatc ccaaggaagt gggattgggc gtgctgattg caagcatcga tactgttcac 240
acgcaagggt cactgcaaac gacgggtatc tgcttattca ggggagtggt 300
5 ttttttgtgc tgaaaagtgg ggaagagacg tttttcaccg gcgcaggtgc ctttgggggt 360
gataatgcgg gcaactctcg gaacctgcg aatggatgac gcgttcaagg ttggatggcg 420
caggacgtgg cgggggagcg ttaattaat tcctctgcac agacgcagga tctcgttatc 480
cccatggggc aaaagataga tgcgcagcag accagcactg ttactatgc ctgtaattta 540
gacaagcgtc tgcctgagct tgctgcagat gcgaacgaag cggacgtgac taagtccacg 600
10 tggacaactg actttcaagt gtatgatagc ttccgggcagc agcatacgtt gcagattaac 660
ttttcgcggt tgccgggggac gaacaatcag tggcaggcca ctgtcgagc ggatccgggg 720
acagcggtag atacgcaaac gcgtgtaggg gtggggacat ctgacgggtg gcgcaaacacc 780
tttattgtaa attttgataa ttttgacac ctgccttcag tgactgacac tgcagggaac 840
gtgaccgggt ctaccggaca ggtgctcctt gaagcgtcgt acgatgttgt cgggtgcgaat 900
15 ccggacgatg cagggcaggt tacgcgccac gctttcacgc tcaacttggg tgaaattggc 960
accgcgcgca atacgattac gcagtttgct ctaccaaagc ctaccggcag 1020
gacggttacg cgatgggata tttggaaaat tttaaaatag atcaaagcgg tgcatacact 1080
ggtgtgtatt caaatggggt gagccaagac attggccagc tcgcacttgc aggatttgca 1140
aatcaagggt gtcttgagaa ggcaggagag aacacctacg tacaatcgaa caactcagg 1200
20 atagcgaaca ttagcacgtc ggggtgtatg gggaaggga agttgattgc agggacactt 1260
gagatgagca acgtagattt aaccgatcaa tttacggata tgatcattac caaaaagg 1320
tttcaggcgg gcgcaagac gattcagaca tcagacacca tgttggtatg ggtgttgagt 1380
ttgaagcgct ga
<212> Type : DNA
25 <211> Length : 1392
SequenceName : SEQ ID 644
SequenceDescription :

Sequence
-----
30 <213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols
<400> PreSequenceString :
atgggggtgca tgcgggtggg gagtgtgctg tgtgtggtgg tgggggtagg agcgagcggg 60
ggagtgtctcg gacaggagtt ttcccgaag ctaactggct ctgccacact tgagtggggc 120
35 atcagctatg gcaagggggt aggcagtcac ggccaggccc ctggtgcagt tatgggcacc 180
ggtccctaca atctgaagca cgggtttcgt actaccaaca cgggtgggag atcctttccc 240
ctggttatgc gcaccacca cgcgcgcgt gggcagcacc cggcactgta tgcggagctg 300
aaggtggcgg acctgcaggc ggacctgagt caggggaaag caggttttgc cgttaagcgc 360
aaggggaagg tagaggcgac actacactgt tatggggcct acctgacgat tgggaagaa 420
40 cccacgtttc tgacgaactt tgcccggctg tggaaagcgt ggggtgacag gcagtaccag 480
gaggatgcgg tacagtatgc gccgggggtt ggggggtttg gcggcaagg tgggtatcgg 540
gcacaggaca ttgggggcag tggggtcagc cttgatgtgg ggtttctctc ctttgccctc 600
aacggtgcct gggtagtac tgacccacg cacagtaagt atggctttgg ggcagacttg 660
aagctaagt atgcgcgtg aggaacccct ctgtgcacgg tagagcttgc cagcaatggt 720
45 acgctagaag acggatacct catcggtgca cagaaggacg caaacaatca gaacaaggat 780
aaactgctgt ggaatgtagg gggccgactc acctcgaaac caggcgccgg cttccgcttc 840
tccttcgccc tcgacgcgg taaccaacac cagagtgac aggaacttca aaatcgaca 900
cagagggcgc agagtgaact caccgcctc tcaaataacc tcttcagggg agaaagtcaa 960
aaacaggaag cctgggtaac ccaggtagtg caacaggcga cgcagacagt aacggctgga 1020
50 gttcgaagcg cgctggaatc tcgggggact acgtacataa acgcgctaga ggcagttcag 1080
cctaactctg ctaaacctac cggtaagggt gtgcaaaatc ttcacacccc gcagggaagt 1140
ccgccaagc tgcgcgcgt tcctgcactt cctgcatttt ccctgatggg gcagggtttg 1200
ctgcagtacg atgcggagca ggtggtgaag gggtttgagc aggtacagac gcaaatcgtc 1260
actgaaatta atcagaaagt gcaagcggct gtggcaaaaa ataatgcaaa catgcaagcg 1320
55 gtcgggggta gtctaggcga tactgcgaga atggtaggcg aagcgctcat taagcagcaa 1380
ctatcacgta agcagaacag cattctgacc atggtgagcg tgcaagatga ggtgaaacag 1440
gatctggcag atttagtgcc gatgatgcga acggaaataa cggcggtttt cgcgagtgtc 1500
cagcaacaca taaccgaaga agtgaagaag aagacggatg cgttgatgac ggggcagcag 1560
atagctcagg ctatacagaa cctgcgtgcg tctgcattgg gtgcctttct aatgggagtc 1620
60 agcgcgtgtg gtctgtatct tgacacctac aatgtcgctc tcgatgcgct gtttacggcg 1680
cagtggaggt ggctgtcttc tggcatatac tttgccacag caccggcaaa cgtttttggc 1740
accaggggtg tagataaac catcgcaagc tgtggcgact ttgcgggatt ccttaagctc 1800
gaaactaaga gcgggtgaccc ctacacccac ctgctcaccg gcctggacgc cggcggtgaa 1860
acacgcgtgt acatccccct caccatgac ctgtacaaaa ataataacgg gaacctctc 1920
65 ccttcggcg gttcctcagg gcacattggc ctgccgggtg tggggaaggc gtggtgtagc 1980
tatcgcatcc cgttgacgga ttacgggtgg gtgaagccaa gcgttacggt ccatgcctct 2040
accaaccgtg cacacctgaa tgcccctgct gcagggtggag cagtaggagc tacctatcta 2100

```

```

accaaggagt actgtgcaca gctgctgtgt ggtattttcag ccagtcctcat agagaagacg 2160
gtattctccc ttgattggga acagggtatg ctctctgatg tcccgtacct gctgggtgtcc 2220
gagtgcctca cccagggaat cggccgcata gtgtgctggcg tcacctctct ctggttag 2277

```

5 <212> Type : DNA  
 <211> Length : 2277  
 SequenceName : SEQ ID 645  
 SequenceDescription :

## 10 Sequence

-----

<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
 <400> PreSequenceString :

```

gtgggcaggc aggtgatgca agcgggggta cttgcgggca tggatatgtgc tgcttctgtgt 60
15 tatgcaggcg tactcactcc gcagggtcagt ggcacagccc agctccagtg gggcattgctg 120
ttccagaaga atccacgcac tggcccgggc aagcacaccc atgggtttcg cactaccaat 180
agtctgacta tttccctgcc gttgggtgtca aagcacaccc acaccgccg aggggaggca 240
cgctcagggg tgtgggcaca gctgcagctg aaggacctgg cagtagagct tgcgtcttct 300
aaaagctcaa cggccctgtc ctttaccaaa cctaccgctt ccttccaggc aacctgcac 360
20 tgttatgggg cctacctgac agtgggtacc agtccttctt gtgtggttaa ctttgcccag 420
ctgtggaaac cctttgtcac ccgtgcctat tcagaaaagg aactcgcta tgccctggt 480
ttctcgggct cgggggcaaa actcggctac caggcccaca atgtgggaaa cagcggagta 540
gatgtggaca tcggtttctt ctccttctt tccaatggtg cctgggatag tactgacacc 600
acgcacagca agtatggcct cggggccgat gcaacgcttt cctatggcgt cgaccgtcag 660
25 cggctgctta cgttggagct ggcagggaat gccacactgg accagaacta cgttaaggg 720
accgaagact ccaagaacga aaacaaaaca gcactcctgt ggggagtagg aggccgactc 780
accctcgaac caggcgccgg cttccgcttc tccttcgccc tcgacgccgg taaccaacac 840
cagattcaac agctcgaaac gacccaagag agagctatcc tcaaagcaag ggaagtgtt 900
agacgggtgg aggggaaact cgtgcagaac cttcccaata tcatgatgcc accaggaatc 960
30 accgaacaaa cactctcat agagatggta ggacttgtgt ctttgattgc agaaggaaac 1020
ctcggcagcg ccattcaaac cgtgctagcc gctggcgcgc tcgcgcgctt tgtatcgaa 1080
cttctaccga acatagagca aggagtacgt gatgtcttcc gctcttcga tccaagagtt 1140
gtcactgcta aacttctcgc tttccttgag cgcgcaccta tgaacgcgct caacatagac 1200
gcgctcctgc gtatgcagtg gaagtggctc tcttctggca tatactttgc caccgcaggc 1260
35 actaatatct ttggcaaacg cgtctttgct accactcgtg cgcactactt tgattttgct 1320
ggattcctta agctcgaaac caaaagcggg gacctctaca cccacctgct caccggcctg 1380
aacgccggcg tcgaagcacg cgtgtacatc cccctcacct acatccgtta cagaaataac 1440
ggagggtacg aactgaatgg agctgtgccc cctgggacta tcaatatgcc aattttgggg 1500
aaggcgtggt gcagctatcg catccccctc ggttcccacg cctggcttgc accacacaca 1560
40 tccgtgctcg gcacaaccaa tcgctttaac attattaacc ccgcgggcaa cctgttgaat 1620
gaacgagcgc tccagtacca ggtgggactg acgttcagtc ccttcgagaa ggtggagctc 1680
agcggccagt ggaacaggcg cgtgcttgcg gacgctcctt acatgggcat tgccgagagc 1740
atctggctcg aacgccactt cggcacctt gtctgcggaa tgaaagtgc atggttaa 1797

```

45 <212> Type : DNA  
 <211> Length : 1797  
 SequenceName : SEQ ID 646  
 SequenceDescription :

## 50 Sequence

-----

<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
 <400> PreSequenceString :

```

gtgggcaggc aggtgatgca agcgggggta cttgcgggca tggatatgtgc tgcttctgtgt 60
55 tatgcaggcg tactcactcc gcagggtcagt ggcacagccc agctccagtg gggcattgctg 120
ttccagaaga atccacgcac tggcccgggc aagcacaccc atgggtttcg cactaccaat 180
agtctgacta tttccctgcc gttgggtgtca aagcacaccc acaccgccg aggggaggca 240
cgctcagggg tgtgggcaca gctgcagctg aaggacctgg cagtagagct tgcgtcttct 300
aaaagctcaa cggccctgtc ctttaccaaa cctaccgctt ccttccaggc aacctgcac 360
60 tgttatgggg cctacctgac agtgggtacc agtccttctt gtgtggttaa ctttgcccag 420
ctgtggaaac cctttgtcac ccgtgcctat tcagaaaagg aactcgcta tgccctggt 480
ttctcgggct cgggggcaaa actcggctac caggcccaca atgtgggaaa cagcggagta 540
gatgtggaca tcggtttctt ctccttctt tccaatggtg cctgggatag tactgacacc 600
acgcacagca agtatggcct cggggccgat gcaacgcttt cctatggcgt cgaccgtcag 660
65 cggctgctta cgttggagct ggcagggaat gccacactgg accagaacta cgttaaggg 720
accgaagact ccaagaacga aaacaaaaca gcactcctgt ggggagtagg aggccgactc 780
accctcgaac caggcgccgg cttccgcttc tccttcgccc tcgacgccgg taaccaacac 840

```

	cagagtaacg	cacatgctca	gacccaagag	agagctatcc	tcaaagcaag	ggaagtgttt	900
	agacgggtgg	aggggaaact	cgtgcagAAC	cttcccaata	tcatgatgcc	accaggaatc	960
	accgaacaaa	ccactctcat	agagatggta	ggacttgctg	ctttgattgc	agaaggaacg	1020
	ctcggcagcg	ccattcaaac	cgtgctagcc	gctggcgcgc	tcgcggcgct	tgatcgcaa	1080
5	cttgtagcga	acatagagca	aggagtacgt	gatgtcttcc	gctcttccga	tccaagagtt	1140
	gtcactgcta	aacttctcgc	tttccttgag	cgcgcacctc	tgaacgcgct	caacatagac	1200
	gcgctcctgc	gtatgcagtg	gaagtggctc	tcttctggca	tatactttgc	caccgcaggg	1260
	actaatatct	ttggcaaacg	cgtctttgct	accactcgtg	cgcactactt	tgattttgcc	1320
	ggattcctta	agctcgaaac	caaaagcggg	gacccctaca	cccacctgct	caccggcctg	1380
10	aacgccggcg	tcgaagcacg	cgtgtacatc	ccctccacct	acatccgtta	cagaaataac	1440
	ggagggtacg	aactgaatgg	agctgtgccc	cctggggacta	tcaatatgcc	aattttgggg	1500
	aaggcggtgg	gcagctatcg	catccccctc	ggttcccacg	cctggccttg	accacacaca	1560
	tccgtgctcg	gcacaaccaa	tcgctttaac	attattaacc	cgcggggcaa	cctgttgaat	1620
	gaacgagcgc	tcagtagcca	gggtgggactg	acgttcagtc	ccttcgagaa	gggtggagctc	1680
15	agcggccagt	gggaacaggg	cgtgcttgct	gacgctcctt	acatgggcat	tgccgagagc	1740
	atctgggtccg	aacgccacctt	cggcaccctt	gtctgcggaa	tgaaagtgc	atggtaa	1797

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1797

20      SequenceName : SEQ ID 647  
          SequenceDescription :

Sequence

25	<213> OrganismName : SARS coronavirus Frankfurt 1						
	<400> PreSequenceString :						
	atgtttattt	tcttattatt	tcttactctc	actagtggta	gtgaccttga	cgggtgcacc	60
	acttttgatg	atgttcaagc	tcctaattac	actcaacata	cttcatctat	gagggggggt	120
	tactatcctg	atgaaatttt	tagatcagac	actctttatt	taactcagga	tttatttctt	180
30	ccattttatt	ctaagtgttac	aggggttcat	actattaatc	atacgtttgg	caaccctgtc	240
	atacctttta	aggatgggtat	ttattttgct	gccacagaga	aatcaaatgt	tgcccggtgt	300
	tgggtttttg	gttctacatc	gaacaacaag	tcacagtcgg	tgattattat	taacaattct	360
	actaatgttg	ttatacagagc	atgtaacttt	gaattgtgtg	acaacccttt	ctttgctgtt	420
	tctaaaccca	tgggtacaca	gacacatact	atgatattcg	ataatgcatt	taattgcact	480
35	ttcagagtaca	tatctgatgc	cttttctcgt	gatgtttcag	aaaagtcagg	taatttttaa	540
	cactttcagag	agtttgtgtt	taaaaaataa	gattgggttc	tctatgttta	taagggctat	600
	caacctatag	atgtagtctg	tgatctacct	tctgggttta	acactttgaa	acctattttt	660
	aagttgcctc	ttgggtattaa	cattacaacat	tttagagcca	ttcttacagc	cttttcacct	720
	gtcgaagaca	tttggggcac	gtcagctgca	gcctattttg	ttggctattt	aaagccaact	780
40	acattttatgc	tcaagtatga	tgaaaaatgg	acaatcacag	atgctgttga	ttgttctcaa	840
	aatccacttg	ctgaactcaa	atgctctgtt	aagagctttg	agattgacaa	aggaattttac	900
	cagacctcta	atttcagggt	tgttccctca	ggagatgttg	tgagattccc	taattattaca	960
	aacttggtgc	cttttgaggag	ggtttttaat	gctactaaat	tcccttctgt	ctatgcatgg	1020
	gagagaaaaa	aaatttctaa	ttgtgttgct	tgttactctg	tgctctacaa	ctcaacattt	1080
45	ttttcaacct	ttaagtgtca	tggcggttct	gccactaagt	tgaatgatct	ttgcttctcc	1140
	aatgtctatg	cagattcttt	tgtagtcaag	ggagatgatg	taagacaaat	agcgcagagg	1200
	caaactgggt	ttattgctga	ttataattat	aaattgccag	atgatttcac	gggttggtgc	1260
	cttgcttgga	atactaggaa	cattgatgct	acttcaactg	gtaattataa	ttataaatat	1320
	aggatcttta	gacatggcaa	gcttagggcc	tttagagagag	acatatctaa	tgtgcctttc	1380
50	tccctgatg	gcaaaccctg	cacccacact	gctcttaatt	gttattggcc	attaaatgat	1440
	tatgggtttt	acaccactac	tggcattggc	taccaacctt	acagagttgt	agtactttct	1500
	tttgaacttt	taaatgcacc	ggccacgggt	tgtggaccaa	aattatccac	tgaccttatt	1560
	aagaaccagt	gtgtcaattt	taattttaat	ggactcactg	gtactgggtg	gttaactcct	1620
	tcttcaaaga	gatttcaacc	atttcaacaa	tttggccgtg	atgtttctga	tttactgat	1680
55	tccgttcgag	atcctaaaac	atctgaaata	ttagacattt	caccttgctc	ttttgggggt	1740
	gtaagtgtaa	ttcacactgg	aacaaatgct	tcactctgaag	ttgctgttct	atatcaagat	1800
	gttaactgca	ctgatgtttc	tacagcaatt	catgcagatc	aactcacacc	agcttggcgc	1860
	atatattcta	ctggaaacaa	tgtattccag	actcaagcag	gctgtcttat	aggagctgag	1920
	catgtcgaca	cttcttatga	gtgcgacatt	cctattggag	ctggcatttg	tgctagttag	1980
60	catcacgttt	cttttattacg	tagtactagc	caaaaaacta	ttgtggctta	tactatgtct	2040
	ttaggtgctg	atagttcaat	tgcttactct	aataaacacca	ttgctatacc	tactaacttt	2100
	tcaatttagca	ttactacaga	agtaatgcct	gtttctatgg	ctaaaacctc	cgtagattgt	2160
	aatatgtaca	tctgcgagga	ttctactgaa	tgtgctaatt	tgcttctcca	atatggtagc	2220
	ttttgcacac	aactaaatcg	tgcactctca	ggtattgctg	ctgaacagga	tcgcaacaca	2280
65	cgtgaagtgt	tcgctcaagt	caaacaatg	tacaaaacct	caactttgaa	atattttggg	2340
	ggtttttaatt	tttcacaaat	attacctgac	cctctaaagc	caactaagag	gtcttttatt	2400
	gaggacttgc	tctttaataa	ggtgacactc	gctgatgctg	gcttcatgaa	gcaatatggc	2460

```

gaatgcctag gtgatattaa tgctagagat ctcattttgtg cgcagaagtt caatggactt 2520
acagtgttgc cacctctgct cactgatgat atgattgtctg cctacactgc tgctctagtt 2580
agtgggtactg ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640
gctatgcaaaa tggcatatag gttcaatggc attggagtta cccaaaatgt tctctatgag 2700
5 aacccaaaaac aaatcgccaa ccaatttaac aaggcgatta gtcaaatcca agaatacatt 2760
acaacaacat caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820
ttaaacacac ttgttaaaca acttagctct aattttggtg caatttcaag tgtgctaaat 2880
gatatccttt cgcgacttga taaagtcgag gcggagggtac aaattgacag gtttaattaca 2940
ggcagacttc aaagccttca aacctatgta acacaacaac taatcagggc tgctgaaatc 3000
10 agggcttctg ctaatcttgc tgctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060
agagttgact tttgtggaaa gggctaccac cttatgtcct tcccacaagc agccccgcac 3120
gggtgttctc tcctacatgt cacgtatgtg ccatccagg agaggaactt caccacagcg 3180
ccagcaattt gtcataaggg caaagcatac ttccctcgtg aagggtgtttt tgtgtttaat 3240
ggcaettctt ggtttattac acagaggaaac ttcttttctc cacaaataat tactacagac 3300
15 aatacatttg tctcaggaat ttgtgatgtc gttattggca tcattaacaa cacagtttat 3360
gatcctcttg aacctgagct tgactcattc aagaagagc tggacaagta cttcaaaaat 3420
catacatcac cagatgttga ttttggcgac atttcaggca ttaacgcttc tgtcgtcaac 3480
attcaaaaag aaattgaccg cctcaatgag gtctgtaaaa atttaaatga atcactcatt 3540
gaccttcaag aattgggaaa atatgagcaa tatattaaat ggcttgggta tgtttggctc 3600
20 ggcttcttgg cttggagtaat tgccatcgtc atgtttacaa tcttgctttg ttgcatgact 3660
agttgttgca gttgcctcaa ggggtgcagc tcttgtggtt cttgctgcaa gtttgatgag 3720
gatgactctg agccagttct caagggtgtc aaattacatt acacataa 3768

```

<212> Type : DNA

<211> Length : 3768

25 SequenceName : SEQ ID 648

SequenceDescription :

Sequence

```

-----
30 <213> OrganismName : SARS coronavirus HSR 1
    <400> PreSequenceString :
    atgtttattt tcttattatt tcttactctc actagtggta gtgaccttga ccggtgcacc 60
    acttttggatg atgttcaagc tcctaattac actcaacata cttcatctat gagggggggtt 120
    tactatcctg atgaattttt tagatcagac actctttatt taactcagga tttatttctt 180
35 ccattttatt ctaatgtttac aggggttcat actattaatc atacgttttg caacctgtgc 240
    atacctttta aggatgggat ttattttgct gccacagaga aatcaaatgt tgtccgtggt 300
    tgggtttttg gttctacatc gaacaacaag tcacagtcgg tgattattat taacaattct 360
    actaatgttg ttatacagagc atgtaacttt gaattgtgtg acaacccttt ctttgcgtgt 420
    tctaaccaca tgggtacaca gacacatact atgatattcg ataatgcatt taattgcact 480
40 ttcgagtaca tatctgatgc cttttcgctt gatgtttcag aaaagtcagg taattttaaa 540
    cacttacgag agtttgtgtt taaaaataaa gatgggtttc tctatgttta taagggtctat 600
    caacctatag atgtagtctg tgatctacct tctgggttta acactttgaa acctattttt 660
    aagttgcctc ttggtattaa cattacaaat tttagagcca ttcttacagc cttttcacct 720
    gctcaagaca tttggggcac gtcagctgca gctacttttg ttggctattt aaagccaaact 780
45 acatttatgc tcaagtatga tgaaaaatgg acaatcacag atgctgttga ttgttctcaa 840
    aatccacttg ctgaactcaa atgctctggt aagagctttg agattgacaa aggaatttac 900
    cagacctcta atttcagggt tgttccctca ggagatgttg tgagattccc taatattaca 960
    aacttgtgtc cttttggaga ggtttttaat gctactaaat tcccttctgt ctatgcatgg 1020
    gagagaaaaa aaatttctaa ttgtgttgct gattactctg tgctctacaa ctcaacattt 1080
50 ttttcaacct ttaagtgtga tggcggttct gccactaagt tgaatgatct ttgcttctcc 1140
    aatgtctatg cagattcttt tgtagtcaag ggagatgatg taagacaaat agcgccagga 1200
    caaatgggtg ttattgctga ttataattat aaattgccag atgatttcat gggttgtgtc 1260
    cttgcttgga atactaggaa cattgatgct acttcaactg gtaattataa ttataaatat 1320
    aggtatctta gacatggcaa gcttaggccc tttgagagag acatatctaa tgtgcctttc 1380
55 tcccctgatg gcaaaccttg caccacacct gctcttaatt gttattggcc attaaatgat 1440
    tatgggtttt acaccactac tggcattggc taccaacctt acagagtgtg agtactttct 1500
    tttgaacttt taaatgcacc ggccacggtt tgtggaccaa aattatccac tgaccttatt 1560
    aagaaccagt gtgtcaattt taattttaat ggactcactg gtactgggtg gtttaactct 1620
    tcttcaaaag gattttcaacc atttcaacaa tttggccgtg atgtttctga tttcactgat 1680
60 tccgttcgag atctgaaaac atctgaaata tttagacattt cacttgctc ttttgggggt 1740
    gtaagtgtaa ttacacctgg aacaaatgct tcactctgaag ttgctgttct atatcaagat 1800
    gtttaactgca ctgatgtttc tacagcaatt catgcagatc aactcacacc agcttggcgc 1860
    atatattcta ctggaaacaa tgtattccag actcaagcag gctgtcttat aggagctgag 1920
    catgttcgaca cttcttatga gtgcgacatt cctattggag ctggcatttg tgctagtac 1980
65 catacagttt ctttattacg tagtactagc caaaaatcta ttgtggctta tactatgtct 2040
    ttaggtgctg atagttcaat tgcttactct aataacacca ttgctatacc tactaacttt 2100
    tcaattagca ttactacaga agtaatgcct gtttctatgg ctaaaacctc cgtagattgt 2160

```



aatatgtaca tctgcggaga ttctactgaa tgtgctaatt tgcttctcca atatggtagc 2220  
 ttttgcacac aactaaatcg tgcactctca ggtatttctg ctgaacagga togcaacaca 2280  
 cgtgaagtgt tgcgtcaagt caaacaatg tacaaaaccc caactttgaa atatttttgg 2340  
 gggttttaatt tttcacaaat attacctgac cctctaaagc caactaagag gtctttttatt 2400  
 5 gaggacttgc tctttaataa ggtgacactc gctgatgctg gcttcatgaa gcaatatggc 2460  
 gaatgcctag gtgatattaa tgctagagat ctcatctgtg cgagaaggt caatggactt 2520  
 acagtgttgc cacctctgct cactgatgat atgattgctg cctacactgc tgctctagt 2580  
 agtgggtactg ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640  
 gctatgcaaa tggcatatag gttcaatggc attggagtta cccaaaatgt tctctatgag 2700  
 10 aacccaaaaac aaatcgccaa ccaatttaac aaggcgatta gtcaaatcca agaatacactt 2760  
 acaacaacat caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820  
 ttaaacacac ttgttaaaaca acttagctct aatttttggg caatttcaag tgtgctaaat 2880  
 gatatccttt cgcgacttga taaagtgcag gcgagggtac aaattgacag gttaattaca 2940  
 ggagacttcc aaagccttca aacctatgta acacaacaac taatcagggc tgctgaaatg 3000  
 15 agggcttctg ctaactctgc tgctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060  
 agagtgtgact ttgtggaaa gggctaccac ctatttctct tcccacaagc agccccgat 3120  
 ggtgttgtct tctacatgt cactgatgtg ccacccagg agaggaactt caccacagcg 3180  
 ccagcaattt gtcataaggg caaagcatac ttccctcgtg aaggtgtttt tgtgtttaat 3240  
 ggcacttctt ggtttattac acagaggaac ttcttttctc cacaaataat tactacagac 3300  
 20 aatacatttg tctcaggaaa ttgtgatgtc gttattggca tcattaacaa cacagttaat 3360  
 gatcctctgc aacctgagct tgactcattc aaagaagagc tggacaagta cttcaaaaat 3420  
 catacatcac cagatgttga tcttggcgac atttcaggca ttaacgcttc tgcgtcaac 3480  
 attcaaaaag aaattgacgc cctcaatgag gtgcgtaaaa atttaaatga atcactcatt 3540  
 gaccttcaag aattgggaaa atatgagcaa ggccttggta tgtttggctc 3600  
 25 ggcttcattg ctggactaat tgccatcgct atggttacia tcttgccttg ttgcatgact 3660  
 agttgttgca gttgcctcaa ggtgcatgc tcttgtgggt ctgtctgcaa gtttgatgag 3720  
 gatgactctg agccagttct caagggtgtc aaattacatt acacataa 3768  
 <212> Type : DNA  
 <211> Length : 3768  
 30 SequenceName : SEQ ID 649  
 SequenceDescription :

## Sequence

-----  
 35 <213> OrganismName : SARS coronavirus ZJ01  
 <400> PreSequenceString :  
 atgtttattt tcttattatt tcttactctc actagtggta gtgaccttga ccgggtgcacc 60  
 actttttagt atgttcaagc tcttaattac actcaacata ctcatctat gaggggggtt 120  
 tactatcctg atgaaatttt tagatcagac actccttatt taactcagga tttatttctt 180  
 40 ccattttatt ctaatgttac agggtttcat actattaaat atacgttttg caaccctgtc 240  
 atacctttta aggatgggat ttattttgct gccacagaga aatcaaatgt tgcctgtggt 300  
 tgggtttttg gttctaccat gaacaacaag tcacagtcgg tgattattat taacaattct 360  
 actaatgttg ttatcagagc atgtaacttt gaattgtgtg acaacccttt ctttgcgtgt 420  
 tctaaccaca tgggtacaca gacacatact atgatattcg ataattgcatt taattgcatt 480  
 45 ttogagtaca tatctgatgc ctttctgctt gatgtttcag aaaagtcagg taattttaaa 540  
 cacttacgag agtttgtgtt taaaaataaa gatgggtttc tctatgttta taagggtctat 600  
 caacctatag atgtagtctg tgatctacct tctgggttta acactttgaa acctattttt 660  
 aagttgcctc ttggtattaa cattacaaat tttagagcca ttcttacagc cttttcacct 720  
 gctcaagaca tttggggcac gtcagctgca gcctattttg ttggctattt aaagccaact 780  
 50 acatttatgc tcaagtatga tgaaaatggt acaatcacag atgctgttga ttgttctcaa 840  
 aatccacttg ctgaactcaa atgctctgtt aagagctttg agattgacaa aggaatttac 900  
 cagacctcta atttcagggt tgttccctca ggagatgttg tgagattccc taatattaca 960  
 aacttgtgtc cttttggaga ggtttttaat gctactaaat tcccttctgt ctatgcatgg 1020  
 gagagaaaaa aaatttctaa ttgtgtgtgt gattactctg tgctctacaa ctcaacattt 1080  
 55 ttttcaacct ttaagtgtta tggcgtttct gccactaagt tgaatgatct ttgcttctcc 1140  
 aatgtctatg cagattcttt tgtagtcaag ggagatgatg taagacaaat agcgccagga 1200  
 caaactgggt ttattgtctg ttataattat aaattgccag atgatttcat ggggtgtgtc 1260  
 cttgcttggg atactaggaa cattgatgct acttcaactg gtaattataa ttataaatat 1320  
 aggtatctta gacatggcaa gcttaggccc tttgagagag acatatctaa tgtgcctttc 1380  
 60 tcccctgatg gcaaaccttg caccocactg gctcttaatt gttattggcc attaaatgat 1440  
 tatggttttt acaccactac tggcattggc taccacactt acagagttgt agtactttct 1500  
 tttgaacttt taaatgcacc ggccacggtt tgtggaccaa aattatccac tgaccttatt 1560  
 aagaaccagt gtgtcaattt taattttaat ggactcactg gtactgggtg gtttaactct 1620  
 tcttcaaga gatttcaacc atttcaacaa ttggccgtg atgtttctga tttcactgat 1680  
 65 tccgttcgag atcctaaaac atctgaaata ttagacattt caccttgctc ttttgggggt 1740  
 gtaagtgtaa ttacacctgg aacaaatgct tcatctgaag ttgctgttct atatcaagat 1800  
 gtttaactgca ctgatgtttc tacagcaatt catgcagatc aactcacacc agcttggcgc 1860

```

5   atatatattcta ctggaaacaa tgtattccag actcaagcag gctgtcttat aggagctgag 1920
    catgtcgaca cttcttatga gtgcgacatt cctattggag ctggcatttg tgctagttac 1980
    catacagttt ctttattacg tagtactagc caaaaatcta ttgtggctta tactatgtct 2040
    ttaggtgctg atagttcaat tgcttactct aataacacca ttgctatacc tactaacttt 2100
    tcaattagca ttactacaga agtaatgcct gtttctatgg ctaaaacctc cgtagattgt 2160
    aatatgtaca tctgcggaga ttctactgaa tgtgctaatt tgcttctcca atatggtagc 2220
    ttttgccacac aactaaatcg tgcactctca ggtattgctg ctgaacagga tcgcaacaca 2280
    cgtgaagtgt tcgctcaagt caaacaaatg tacaaaacc caactttgaa atattttggt 2340
    gggttttaatt tttcacaaat attacctgac cctctaaagc caactaagag gtcttttatt 2400
10  gaggacttgc tctttaataa ggtgacactc gctgatgctg gcttcatgaa gcaatatggc 2460
    gaatgcctag gtgatattaa tgctagagat cctatttgctg cgcagaagtt caatggactt 2520
    acagtgttgc caactctgct cactgatgat atgtattgctg cctacactgc tgccttagtt 2580
    agtgggtactg ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640
    gctatgcaaa tggcatatag gttcaatggc attggcgta cccaaaatgt tctctatgag 2700
15  aacccaaaac aaatcgccaa ccaatttaac aaggcgatta gtcaaatca agaatacatt 2760
    acaacaacat caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820
    ttaaacacac ttgttaaaaa acttagctct aattttggtg caatttcaag tgtgctaaat 2880
    gatatacctt cgcgacttga taaagtcgag gcgaggtac aaattgacag gtaattaca 2940
    ggcagacttc aaagccttca aacctatgta acacaacaac taatcagggc tgctgaaatc 3000
20  agggcttctg caactcttgc tgctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060
    agagttagact tttgtggaag gggctaccac cttatgtcct tcccacaagc agccccgc 3120
    ggtgttgtct tcctacatgt cacgtatgtg ccattcccag agaggaactt caccacagcg 3180
    ccagcaattt gtcattgaag caaagcatac ttccctcggt aaggtgtttt tgtgtttaat 3240
    ggcaactctt ggtttattac acagaggaag ttcttttctc cacaataaat tactacagac 3300
25  aatacatttg tctcaggaaa ttgtgatgtc gttattggca tcattaacaa cacagtttat 3360
    gatcctctgc aacctgagct tgactcattc aaagaagagc tggacaagta cttcaaaaat 3420
    catacatcac cagatgttga tcttggcgac atttcaggca ttaacgcttc tgtcgtcaac 3480
    attcaaaaag aaattgaccg cctcaatgag gtgcctaaaa atttaaatga atcactcatt 3540
    gaccttcaag aattgggaaa atatgagcaa tatattaaat ggccttggtg tgtttggctc 3600
30  ggcttcattg ctggactaat tgccatcgtc atggtttaca tcttgccttg ttgcatgact 3660
    agttgttgca gttgcctcaa ggggtgcatgc tcttgtggtt cttgctgcaa gtttgatgag 3720
    gatgactctg agccagttct caagggtgct aaattacatt acacataa 3768

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

35 SequenceName : SEQ ID 650

SequenceDescription :

Sequence

-----

```

40 <213> OrganismName : SARS coronavirus TW1
    <400> PreSequenceString :
    atgtttatatt tcttattatt tcttactctc actagtggta gtgaccttga ccggtgcacc 60
    actttttgatg atgttcaagc tcctaattac actcaacata cttcatctat gagggggggtt 120
    tactatcctg atgaaatttt tagatcagac actcctttatt taactcagga tttatttctt 180
45  ccatttttatt ctaatgttac aggggtttcat actattaatc atacgttttg caaccctgtc 240
    atacctttta aggatggat ttttttgcct gccacagaga aatcaaatgt tgtccgtggg 300
    tgggtttttg gttctaccat gaacaacaag tcacagtcgg tgattattat taacaattct 360
    actaatgttg ttatacagc atgtaacttt gaattgtgtg acaacccttt ctttgcgtgt 420
    tctaaaccca tgggtacaca gacacatact atgatattcg ataattgcatt taattgcact 480
50  ttcgagtaca tatctgatgc cttttcgctt gatgtttcag aaaagtcagg taatttttaa 540
    cacttacgag agtttgtgtt taaaaataaa gatgggtttc tctatgttta taagggttat 600
    caacctatag atgtagtctg tgatctacct tctgggttta acactttgaa acctattttt 660
    aagttgcctc ttggtattaa cattacaaat ttttagagcca ttcttacagc cttttcacct 720
    gctcaagaca tttggggcac gtcagctgca gcctattttg ttggctattt aaagccaact 780
55  acatttatgc tcaagtatga tgaatgggt acaatcacag atgctgttga ttgttctcaa 840
    aatccacttg ctgaactcaa atgctctggt aagagctttg agattgacaa aggaatttac 900
    cagacctcta atttcagggt tggtccctca ggagatgttg tgagattccc taatattaca 960
    aacttgtgtc ctttttgaga ggtttttaat gctactaaat tcccttctgt ctatgcatgg 1020
    gagagaaaaa aaatttctaa ttgtgttgct gattactctg tgctctacaa ctcaacattt 1080
60  ttttcaacct ttaagtgtc tggcgtttct gccactaagt tgaatgatct ttgcttctcc 1140
    aatgtctatg cagattcttt tgtagtcaag ggagatgatg taagacaaat agcgccagga 1200
    caaactgggt ttattgtgta ttataattat aaattgccag atgatttcat ggggtgtgtc 1260
    cttgcttgga atactaggaa cattgatgct acttcaactg gtaattataa ttataaatat 1320
    aggtatccta gacatggcaa gcttagggcc tttgagagag acatatctaa tgtgcctttc 1380
65  tcccctgatg gcaaaccttg caccocacct gctcttaatt gttattggcc attaaatgat 1440
    tatgggtttt acaccactac tggcattggc taccaacctt acagagttgt agtactttct 1500
    tttgaacttt taaatgcacc ggccacgggt tgtggacca aattatccac tgaccttatt 1560

```

```

5  aagaaccagt gtgtcaattt taattttaat ggactcactg gtactgggtgt gtttaactcct 1620
   tcttcaaaga gatttcaacc atttcaacaa tttggcctgt atgtttctga tttcactgat 1680
   tccgttcgag atcctaaaac atctgaaata ttagacattt caccttgctc ttttgggggt 1740
   gtaagtgtaa ttacacctgg aacaaatgct tcatctgaag ttgctgttct atatcaagat 1800
   gtttaactgca ctgatgtttc tacagcaatt catgcagatc aactcacacc agcttgccgc 1860
   atatatctta ctggaacaaa tgtattccag actcaagcag gctgtcttat aggagctgag 1920
   catgtcgaca cttcttatga gtgcgacatt cctattggag ctggcatttg tgctagttag 1980
   catacagttt ctttattacg tagtactagc caaaaatcta ttgtggctta tactatgtct 2040
   ttaggtgctg atagtccaat tgcttactct aataacacca ttgctatacc tactaacttt 2100
   tcaattagca ttactacaga agtaatgcct gtttctatgg ctaaaacctc cgtagattgt 2160
   aatatgtaca tctgcggaga ttctactgaa tgtgctaatt tgcttctcca atatggtagc 2220
   ttttgcacac aactaaatcg tgcactctca ggtattgctg ctgaacagga tcgcaacaca 2280
   cgtgaagtgt tgcctcaagt caaacaaatg taaaaaacc caactttgaa atattttggt 2340
   ggtttttaatt tttcacaaaat attacctgac cctctaagac caactaagag gtcttttatt 2400
15  gaggacttgc tctttaataa ggtgacactc gctgatgctg gcttcatgaa gcaatatggc 2460
   gaatgcctag gtcatattaa tgctagagat cctatttgct cgcagaagtt caatggactt 2520
   acagtgttgc cacctctgct cactgatgat atgattgctg cctacactgc tgctctagtt 2580
   agtgggtactg ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640
   gctatgcaaa tggcatatag gttcaatggc attggagtta cccaaaatgt tctctatgag 2700
20  aacaaaaaac caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820
   ttaaacacac ttgttaaaaca acttagctct aattttggtg caatttcaag tgtgctaaat 2880
   gatattcctt cgcgacttga taaagtgcag gctggaggtac aaattgacag gtttaattaca 2940
   ggcagactac aaagccttca aacctatgta acacaacaac taatcagggc tgctgaaatc 3000
25  agggcttctg ctaactctgc tgctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060
   agagttgact tttgtggaaa gggctaccac cttatgtcct tcccacaagc agccccgcat 3120
   ggtgttgtct tcctacatgt cacgtatgtg ccatcccagg agaggaactt caccacagcg 3180
   ccagcaattt gtcatgaagg caaagcatac ttccctcgtg aaggtgtttt tgtgtttaat 3240
   ggcacttctt ggtttattac acagaggaac ttcttttctc cacaaataat tactacagac 3300
30  aatacatattg tctcaggaaa ttgtgatgtc gttattggca tcattaacaa cacagtttat 3360
   gatecctctg aacctgagct tgactcattc aaagaagagc tggacaagta cttcaaaaaa 3420
   catacactac cagatgttga tcttggcgac atttcaaggc ttaacgcttc tgtcgtcaac 3480
   attcaaaaag aaattgaccg cctcaatgag gtcgctaaaa atttaaataa atcactcatt 3540
   gaccttcaag aattgggaaa atatgagcaa tatattaaat ggcttgggta tgtttggctc 3600
35  ggcttcattg ctggactaat tgccatcgtc atggttacaa tcttgttttg ttgcatgact 3660
   agttgttgca gttgcctcaa ggtgcatgc tcttgtggtt cttgtgcaa gtttgatgag 3720
   gatgactctg agccagttct caagggtgtc aaattacatt acacataa 3768

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

```

40  SequenceName : SEQ ID 651
   SequenceDescription :

```

## Sequence

```

45  -----
   <213> OrganismName : SARS coronavirus CUHK-Su10
   <400> PreSequenceString :
   atgtttattt tcttattatt tcttactctc actagtggta gtgaccttga ccggtgcacc 60
   actttttagt atgttcaagc tcctaattac actcaacata cttcatctat gaggggggtt 120
   tactatcctg atgaaatttt tagatcagac actctttatt taactcagga tttatttctt 180
50  ccatttttatt ctaatgttac agggtttcat actattaatc atacgttttg caacctgtc 240
   atacctttta aggatggat ttattttgct gccacagaga aatcaaatgt tgtccgtggt 300
   tgggtttttt gttctacat gaacaacaag tcacagtcgg tgattattat taacaattct 360
   actaatgttg ttatacgagc atgtaacttt gaattgtgtg acaacccttt ctttgcgtgt 420
   tctaaaccca tgggtacaca gacacatact atgatattcg ataattgcatt taattgcact 480
55  ttcgagtaca tatctgatgc cttttcgctt gatgtttcag aaaagtcagg taattttaaa 540
   cacttacagag agtttgtgtt taataataaa gatgggttct tctatgttta taagggtcat 600
   caacctatag atgtagtctg tgatctacct tctgggttta acactttgaa acctattttt 660
   aagttgcctc ttggtattaa cattacaaat ttttagagcca ttcttacagc cttttcacct 720
   gtcgaagaca tttggggcac gtcagctgca gcctattttg ttggctattt aaagccaact 780
60  acattttatg tcaagtatga tgaaatgggt tcaatcacag atgctgttga ttgttctcaa 840
   aatccacttg ctgaactcaa atgctctggt aagagctttg agattgacaa aggaatttac 900
   cagacctcta atttcagggt tgttccctca ggagatgttg tgagattccc taatattaca 960
   aacttgtgtc cttttggaga ggtttttaat gctactaaat tcccttctgt ctatgcatgg 1020
   gagagaaaaa aaatttctaa ttgtgtgtct gactactctg tgctctacaa ctcaacattt 1080
65  ttttcaacct ttaagtgtca tggcgtttct gccactaagt tgaatgatct ttgcttctcc 1140
   aatgtctatg cagattcttt tgtagtcaag ggagatgatg taagacaaat agcgcagga 1200
   caaactgggt ttattgctga ttataattat aaattgccag atgatttcat ggggttgtgtc 1260

```

	cttgccttgga	atactaggaa	cattgatgct	acttcaactg	gtaattataa	ttataaatat	1320
	aggatatctta	gacatggcaa	gcttagggccc	tttgagagag	acatatctaa	tgtgcctttc	1380
	tcccctgatg	gcaaaccttg	caccccacct	gctcttaatt	gttattggcc	attaaatgat	1440
	tatgggttttt	acaccactac	tggcattggc	taccaacctt	acagagttgt	agtactttct	1500
5	tttgaacttt	taaatgcacc	ggccacgggt	tgtggacca	aattatccac	tgaccttatt	1560
	aagaaccagt	gtgtcaattt	taattttaat	ggactcactg	gtactgggtg	gttaactcct	1620
	tcttcaaaga	gatttcaacc	atlttcaacaa	tttggccgtg	atgtttctga	tttcaactgat	1680
	tccgttcgag	atcctaaaac	atctgaaata	ttagacattt	caccttgctc	ttttgggggt	1740
	gtaagtgtaa	ttacacctgg	aacaaatgct	tcactctga	ttgctgttct	atatcaagat	1800
10	gttaactgca	ctgatgtttc	tacagcaatt	catgcagatc	aactcacacc	agcttggcgc	1860
	atatattcta	ctggaaacaa	tgtattccag	actcaagcag	gctgtcttat	aggagctgag	1920
	catgtcgaca	cttcttaata	gtgcgacatt	cctattggag	ctggcatttg	tgctagttag	1980
	catacagttt	ctttattacg	tagtactagc	caaaaatcta	ttgtggctta	tactatgtct	2040
	ttagggtgctg	atagttcaat	tgcttactct	aataacacca	ttgtctatacc	tactaacttt	2100
15	tcaattagca	ttactacaga	agtaatgcct	gtttctatgg	ctaaaacctc	cgtagattgt	2160
	aatatgtaca	ttctcagaga	ttctactgaa	gtgtcttaatt	tgcttctcca	atatggtagc	2220
	ttttgcacac	aactaaatcg	tgcaactctca	gggtattgctg	ctgaacagga	tcgcaacaca	2280
	cgtgaagtgt	tcgctcaagt	caaacaaatg	tacaaaaccc	caactttgaa	atattttgggt	2340
	gggttttaatt	tttcacaaat	attacctgac	cctctaaagc	caactaagag	gtctttttatt	2400
20	gaggactgtgc	cttcttaata	gttgacattc	gctgtatgctg	gcttcatgaa	gcaatatggc	2460
	gaatgcctag	gtgatattaa	tgctagagat	ctcatttgtg	cgcagaagtt	caatggactt	2520
	acagtgtttgc	cacctctgct	cactgatgat	atgattgctg	cctacactgc	tgctctagtt	2580
	agtgggtactg	ccactgctgg	atggacattt	gggtgctggcg	ctgctcttca	aatacctttt	2640
	gctatgcaaa	tggtcatatag	gttcaatggc	attggagtta	ccaaaatgt	tctctatgag	2700
25	aaccaaaaac	aaatcgccaa	ccaatttaac	aaggcgatta	gtcaaattca	agaatcactt	2760
	acaacaacat	caactgcatt	gggcaagctg	caagacgttg	ttaaccagaa	tgctcaagca	2820
	ttaaacaacac	ttgttaaaaca	acttagctct	aattttgggtg	caatttcaag	tgtgctaaat	2880
	gatctccttt	cgcgacttga	taaagtgcag	gcggaggtac	aaattgacag	gttaattaca	2940
	ggcagacttc	aaagccttca	aacctatgta	acacaacaac	taatcagggc	tgctgaaatc	3000
30	agggcttctg	ctaactctgc	tgctactaaa	atgtctgagt	gtgttcttgg	acaatcaaaa	3060
	agagttgact	tttgtggaaa	gggtaccac	cctatgtcct	tcccacaagc	agccccgcct	3120
	ggtgttgctg	tctacatagt	cacgtatgtg	ccatcccagg	agaggaactt	caccacagcg	3180
	ccagcaattt	gtcatgaagg	caaagcatac	ttccctcgtg	aagggtgttt	tgtgtttaat	3240
	ggcacttctt	ggttttattac	acagaggaac	ttcttttctc	cacaaataat	tactacagac	3300
35	aatacatttg	tctcaggaaa	ttgtgatgtc	gttattggca	tcattaacaa	cacagtttat	3360
	gatcctctgc	aacctgagct	tgactcattc	aaagaagagc	tggaacaagta	cttcaaaaat	3420
	catacatcac	cagatgttga	tcttggcgac	atttcaggca	ttaacgcttc	tgctgtcaac	3480
	attcaaaaag	aaattgaccg	cctcaatgag	gtcgctaaaa	atttaaatga	atcactcatt	3540
	gaccttcaag	aattgggaaa	atatgagcaa	tatattaaat	ggccttggtg	tgtttggtct	3600
40	ggcttctattg	ctggactaat	tgccatcgtc	atgggttaca	tcttgctttg	ttgcattgat	3660
	agttgttgca	gttgectcaa	gggtgcacgc	tcttgtgggt	cttgctgcaa	gtttgatgag	3720
	gatgactctg	agccagttct	caagggtgtc	aaattacatt	acacataa		3768

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

45      SequenceName : SEQ ID 652  
          SequenceDescription :

Sequence

-----

50      &lt;213&gt; OrganismName : SARS coronavirus Urbani

&lt;400&gt; PreSequenceString :

	atgttttattt	tcttattatt	tcttactctc	actagtggta	gtgaccttga	ccgggtgcacc	60
	actttttgatg	atgttcaagc	tcctaattac	actcaacata	cttcatctat	gagggggggtt	120
	tactatcctg	atgaaatttt	tagatcagac	actctttatt	taactcagga	tttatttctt	180
55	ccatttttatt	ctaattgttac	agggtttcat	actatttaac	atacgttttg	caaccctgtc	240
	atacctttta	aggatgggtat	ttattttgct	gccacagaga	aatcaaagt	tgctccgtggg	300
	tggtgtttttg	gtttctaccat	gaacaacaag	tcacagtcgg	tgattattat	taacaattct	360
	actaatgttg	ttatacagag	atgtaacttt	gaattgtgtg	acaacccttt	ctttgtctgtt	420
	tctaaaccca	tggttacaca	gacacatact	atgatattcg	ataatgcatt	taattgcact	480
60	ttcgagtaaca	tattctgatg	cttttcgctt	gatgtttcag	aaaagtcagg	taatttttaa	540
	cactttacgag	agttttgtgt	taaaaataaa	gatgggtttc	tctatgttta	taagggttat	600
	caacctatag	atgtagtctg	tgatctacct	tctgggttta	acactttgaa	acctattttt	660
	aagttgcctc	ttggatttaa	cattacaaat	tttagagcca	ttcttacagc	cttttcacct	720
	gctcaagaca	tttggggcag	gtcagctgca	gcctattttg	ttggctattt	aaagccaact	780
65	acattttatgc	tcaagtatga	tgaaaaatgg	acaatcacag	atgctgttga	ttgttctcaa	840
	aatccacttg	ctgaactcaa	atgctctgtt	aagagctttg	agattgacaa	aggaattttac	900
	cagacctcta	atttcagggt	tgttccctca	ggagatgttg	tgagattccc	taatattaca	960

```

aacttggtgc cttttggaga gggttttaaat gctactaaat tcccttctgt ctatgcacgg 1020
gagagaaaaa aaatttctaa ttgtgttgct gattactctg tgctctacaa ctcaaacttt 1080
ttttcaacct ttaagtgtca tggcgtttct gccactaagt tgaatgatct ttgttctcc 1140
aatgtctatg cagatttctt tttagtcaag ggagatgatg taagacaaat agcgccagga 1200
5 caaactgggtg ttattgtctga ttataattat aaattgccag atgatttcat ggggtgtgtc 1260
cttgcttgga atactaggaa cattgatgct acttcaactg gtaattataa ttataaatat 1320
aggatcttta gacatggcaa gcttagggcc tttgagagag acatatctaa tgtgcctttc 1380
tccctgatg gcaaaccctg caccocacct gctcttaatt gttattggcc attaaatgat 1440
tatggttttt acaccactac tggcattggc taccaacctt acagagtgt agtactttct 1500
10 tttgaacttt taaatgcacc ggccacggtt tgtggaccaa aattatccac tgaccttatt 1560
aagaaccagt gtgtcaattt taattttaat ggactcactg gtactgggtg gttactcctt 1620
tcttcaaaga gatttcaacc atttcaacaa ttggccgctg atgtttctga tttcactgat 1680
tccgttcgag atcctaaaac atctgaaata ttagacattt caccctgctc ttttgggggt 1740
gtaagtgtaa ttacacctgg aacaaatgct tcatctgaag ttgctgttct atatcaagat 1800
15 gtttaactgca ctgatgtttc tacagcaatt catgcagatc aactcacacc agcttggcgc 1860
atatattcta ctggaaacaa tgtattccag actcaagcag gctgtcttat aggagctgag 1920
catgtcgaca cttcttatga gtgcgacatt cctattggag ctggcatttg tgctagttag 1980
catacagttt ctttattacg tagtactagc caaaaatcta ttgtggctta tactatgtct 2040
ttagggtgtg atagtccaat tgcttactct aataacacca ttgctatacc tactaacttt 2100
20 tcaatcagca ttactacaga agtaatgcct gttctatgg ctaaaacctc cgtagattgt 2160
aatatgtaca tctgcggaga ttctactgaa tgtgctaatt tgcttctcca atatggtagc 2220
ttttgcacac aactaaatcg tgcactctca ggtattgctg ctgaacagga tcgcaacaca 2280
cgtgaagtgt tcgctcaagt caaacaatg tacaaaacct caactttgaa atattttggt 2340
ggtttttaatt ctctcaaat attactaac cttctaaagc caactaagag gtcttttatt 2400
25 gaggacttgc tctttaataa ggtgacactc gctgatgctg gcttcatgaa gcaatatggc 2460
gaatgcctag gtgatattaa tgctagagat ctcatttgtg cgcagaagtt caatggactt 2520
acagtgttgc cacctctgct cactgatgat atgattgctg cctacactgc tgctctagtt 2580
agtgttagct ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640
gctatgcaaa tggcatatag gttcaatggc attggagtta cccaaaatgt tctctatgag 2700
30 aaccaaaaac aaatcgccaa ccaatttaac aaggcgatta gtcaaatca agaactcatt 2760
acaacaacat caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820
ttaaacacac ttgttaacaa acttagctct aattttgggt caatttcaag tgtgctaaat 2880
gatatccttt cgcgacttga taaagtcgag gcgagggtac aaattgacag gtttaattaca 2940
ggcagacttc aaagccttca aacctatgta acacaacaac taatcagggtc tgctgaaatc 3000
35 agggcttctg ctaactcttg tctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060
agagtttagc tttgtgaaa gggctaccac cttatgtcct tcccacaagc agccccgcct 3120
gggtgtgtct tctacatgt cacgtatgtg ccatccagg agaggaaact caccacagcg 3180
ccagcaattt gtcataaggg caaagcatac ttccctcgtg aagggtgttt' tgtgtttaat 3240
ggcacttctt ggtttattac acagaggaac ttcttttctc cacaataaat tactacagac 3300
40 aatacatttg tctcaggaaa ttgtgatgtc ttatttggca tcattaacaa cacagtttat 3360
gatcctctgc aacctgagct cgactcattc aaagaagagc tggacaagta cttcaaaaat 3420
catacatcac cagatgttga tcttggcgac atttcaggca ttaacgcttc tgcgtcaac 3480
attcaaaaag aaattgaccg cctcaatgag gtcgctaaaa atttaaatga atcactcatt 3540
gaccttcaag aattgggaaa atatgagcaa ttatttaaat ggccttggta tgtttggctc 3600
45 ggcttcattg ctggactaat tgccatgctc atggttacaa tcttgctttg ttgcatgact 3660
agttgttgca gttgcctcaa ggtgcatgc tcttgtggtt cttgctgcaa gtttgatgag 3720
gatgactctg agccagttct caagggtgtc aaattacatt acacataa 3768

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

50 SequenceName : SEQ ID 653

SequenceDescription :

Sequence

-----

55 &lt;213&gt; OrganismName : SARS coronavirus

&lt;400&gt; PreSequenceString :

```

atgtttattt tcttattatt tcttactctc actagtggta gtgaccttga ccggtgcacc 60
acttttgatg atgttcaagc tcctaattac actcaacata cttcatctat gagggggggt 120
tactatctcg atgaaatatt tagatcagac actctttatt taactcagga tttatttctt 180
60 ccattttatt ctaatgtttac agggtttcat actataatc atacgttttg caacctgtc 240
atacctttta aggatggat ttattttgct gccacagaga aatcaaatgt tgtccgtggg 300
tgggtttttg gttctaccat gaacaacaag tcacagtcgg tgattattat taacaattct 360
actaatgttg ttatacgagc atgtaacttt gaattgtgtg acaacctttt ctttgcgtgt 420
tctaaccaca tgggtacaca gacacatact atgatattcg ataatgcatt taattgcact 480
65 ttogagtaca tctctgatgc ctttctgctt gatgtttcag aaaagtcagg taattttaaa 540
cacttacgag agtttgtgtt taaaaataaa gatgggtttc tctatgttta taagggctat 600
caacctatag atgtagtctg tgatctacct tctgggttta acactttgaa acctattttt 660

```

	aagttgcctc	ttgggtattaa	cattacaaat	tttagagcca	ttcttacagc	cttttcacct	720
	gctcaagaca	tttggggcac	gtcagctgca	gcctattttg	ttggctattt	aaagccaact	780
	acatttatgc	tcaagtatga	tgaaaaatgg	acaatcacag	atgctgttga	ttgttctcaa	840
	aatccacttg	ctgaactcaa	atgctctgtt	aagagctttg	agattgacaa	aggaatttac	900
5	cagacctcta	atttcagggt	tggtccctca	ggagatgttg	tgagattccc	taatattaca	960
	aacttggtgc	cttttggaga	ggtttttaat	gctactaaat	tcccttctgt	ctatgcatgg	1020
	gagagaaaaa	aaatttctaa	ttgtgttgct	gattactctg	tgctctacaa	ctcaacattt	1080
	ttttcaacct	ttaagtgcga	tggcgtttct	gccactaagt	tgaatgatct	ttgcttctcc	1140
	aatgtctatg	cagattcttt	tgtagtcaag	ggagatgatg	taagacaaat	agcgccagga	1200
10	caaactgggtg	ttattgctga	ttataattat	aaattgccag	atgatttcat	gggttggtgc	1260
	cttgcttgga	atactaggaa	cattgatgct	acttcaactg	gtaattataa	ttataaatat	1320
	aggtaactta	gacatggcaa	gcttaggccc	tttgagagag	acatatctaa	tggtgctttc	1380
	tccctgatg	gcaaaccctg	cacccacct	gctcttaatt	gttattggcc	attaaatgat	1440
	tatgggtttt	acaccactac	tggcattggc	taccaacctt	acagagtgtg	agtactttct	1500
15	tttgaacttt	taaattgcacc	ggccacgggt	tgtggaccaa	aattatccac	tgaccttatt	1560
	aagaaccagt	gattgtcaatt	taattttaat	gtactggtgt	gtactggtgt	gttaactcct	1620
	tcttcaaaga	gatttcaacc	atttcaacaa	tttggccgtg	atgtttctga	tttcaactgat	1680
	tccgttcgag	atcctaaaac	atctgaaata	ttagacattt	caccttgccg	ttttgggggt	1740
	gtaagtgtaa	ttacacctgg	aacaaatgct	tcactctgaag	ttgctgttct	atatcaagat	1800
20	gttaactgca	ctgctgtttc	tacagcaatt	ctcagagatc	aactcacacc	agcttgccgc	1860
	atataattcta	ctggaacaaa	tgtattccag	actcaagcag	gctgtcttat	aggagctgag	1920
	catgtcgaca	cttcttatga	gtgcgacatt	cctattggag	ctggcatttg	tgctagttag	1980
	catacagttt	ctttattacg	tagtactagc	caaaaatcta	ttgtggctta	tactatgtct	2040
	ttagtgctg	ctgttcaaat	tgcttactct	tactaacacca	ttgctatacc	tactaaactt	2100
25	tcaattagca	ttactacaga	agtaatgcct	gtttctatgg	ctaaaacctc	cgtagattgt	2160
	aatatgtaca	tctgcggaga	ttctactgaa	tgtgtcaatt	tgcttctcca	atatggttagc	2220
	ttttgcacac	aactaaatcg	tgcactctca	ggtattgtct	ctgaacagga	tgcgaacaca	2280
	cgtgaagtgt	tcgctcaagt	caaacaaatg	tacaaaacc	caactttgaa	atattttgggt	2340
	gggttttaatt	tttcacaaat	attacctgac	cctctaaagc	caactaagag	gtcttttatt	2400
30	gaggacttgc	tctttaataa	ggtgacactc	gctgatgctg	gcttcatgaa	gcaatatggc	2460
	gaatgcctag	gtgatattaa	tgctagagat	ctcattttgt	cgcagaagtt	caatggactt	2520
	acagtgttgc	cacctctgct	cactgatgat	atgattgctg	cctacactgc	tgctctagtt	2580
	agtggtagctg	ccactgctgg	atggacattt	gggtgctggcg	ctgctcttca	aatacctttt	2640
	gctatgcaaa	tggcatatag	gttcaatggc	attggagtta	cccaaaatgt	tctctatgag	2700
35	aacccaaaaa	aaatcgccaa	ccaatttaac	aaggcgatta	gtcaaatcca	agaatcactt	2760
	acaacaacat	caacttcatt	gggcaagctg	caagacgttg	ttaaccagaa	tgctcaagca	2820
	ttaaacacac	ttgttaaaca	acttagctct	aattttgggtg	caatttcaag	tgtgctaaat	2880
	gatatacctt	cgcgacttga	taaagtcgag	gcggaggtag	aaattgacag	gttaattaca	2940
	ggcagacttc	aaagccttca	aacctatgta	acacaacaac	taatcagggc	tgctgaaatc	3000
40	agggcttctg	ctaactttgc	tgctactaaa	atgtctgagt	gtgttcttgg	acaatcaaaa	3060
	agagttgact	tttgtggaaa	gggctaccac	cttatgtcct	tcccacaagc	agccccgcat	3120
	gggtgtgtct	tcctacatgt	cacgtatgtg	ccatcccagg	agaggaactt	caccacagcg	3180
	ccagcaattt	gtcatgaagg	caaagcatac	ttccctcgtg	aagggtgttt	tgtgtttaat	3240
	ggcacttctt	ggtttattac	acagaggaac	ttcttttctc	cacaaataat	tactacagac	3300
45	aatacatttg	tctcaggaaa	ttgtgatgtc	gttattggca	tcattaacaa	cacagtttat	3360
	gatacctctg	aacctgagct	tgactcattc	aaagaagagc	tggaacaagta	cttcaaaaat	3420
	catacatcac	cagatgttga	tcttggcgac	atttcaggca	ttaacgcttc	tgtcgtcaac	3480
	attcaaaaag	aaattgaccg	cctcaatgag	gtcgctaaaa	atttaaatga	atcactcatt	3540
	gaccttcaag	aattgggaaa	atatgagcaa	tatattaaat	ggccttggta	tgtttggctc	3600
50	ggcttcattg	ctggactaat	tgccatcgtc	atgggttaca	tcttgctttg	ttgcatgact	3660
	agttgttgca	gttgccctcaa	gggtgcatgc	tcttgtggtt	cttgctgcaa	gtttgatgag	3720
	gatgactctg	agccagtctc	caagggtgtc	aaattacatt	acacataa		3768
	<212> Type : DNA						
	<211> Length : 3768						
55	SequenceName : SEQ ID 654						
	SequenceDescription :						
	Sequence						
	-----						
60	<213> OrganismName : SARS coronavirus TOR2						
	<400> PreSequenceString :						
	atgtttat	tcttattatt	tcttactctc	actagtggta	gtgaccttga	ccggtgcacc	60
	acttttgatg	atgttcaagc	tcctaattac	actcaacata	cttcatctat	gagggggggt	120
	tactatcctg	atgaaat	tttagatcagac	actctttatt	taactcagga	tttatttctt	180
65	ccattttatt	ctaattgttac	agggtttcat	actatataatc	atacgttttg	caacctgtgc	240
	atacctttta	aggatgggtat	ttattttgtc	gccacagaga	aatcaaatgt	tgtccgtgggt	300
	tgggtttttg	gttctaccat	gaacaacaag	tcacagtcgg	tgattattat	taacaattct	360

```

actaatgttg ttatacagagc atgtaacttt gaattgtgtg acaacccttt ctttgcgtgt 420
tctaaaccca tgggtacaca gacacatact atgatattcg ataatgcatt taattgcact 480
tctcagtaga tatctgatgc cttttcgctt gatgtttcag aaaagtcagg taattttaaa 540
cacttacgag agtttgtgtt taaaaataaa gatgggtttc tctatgttta taagggttat 600
5 caacctatag atgtagttcg tgatctacct tctgggttta acactttgaa acctattttt 660
aagttgcctc ttggtattaa cattacaaat ttttagagcca ttcttacagc cttttcacct 720
gctcaagaca tttggggcac gtcagctgca gcctattttg ttggctattt aaagccaact 780
acatttatgc tcaagtatga tgaaaatggg acaatcacag atgctgttga ttgttctcaa 840
aatccacttg ctgaactcaa atgctctgtt aagagctttg agattgacaa aggaattttac 900
10 cagacctcta atttcagggt tgttccctca ggagatgttg tgagattccc taatattaca 960
aacttgtgtc cttttggaga gggttttaat gctactaaa tcccttctgt ctatgcatgg 1020
gagagaaaaa aaatttctaa ttgtgttgct tcttactctg tgctctacaa ctcaacattt 1080
ttttcaacct ttaagtgcta tggcgtttct gccactaagt tgaatgatct ttgcttctcc 1140
aatgtctatg cagattcttt tgtagtcaag ggagatgatg taagacaaat agcgccaggga 1200
15 caaactgggt ttattgctga ttataattat aaattgccag atgatttcat ggggttggtc 1260
cttgcttgga taaataggaa cattgatgct gcttaactg gtaattataa ttataaattt 1320
aggtatctta gacatggcaa gcttaggccc tttgagagag acatatctaa tgtgcctttc 1380
tcccttgatg gcaaaccttg caccacacct gctcttaatt gttattggcc attaaatgat 1440
tatggttttt acaccactac tggcattggc tactaacctt acagagttgt agtactttct 1500
20 tttgacattt taattgcacc ggccacgggt tgtgaccaa aattatccac tgacctattt 1560
aagaaccagt gtgtcaattt taattttaat ggactcactg gtactgggtg gttactcct 1620
tcttcaaaga gatttcaacc atttcaacaa tttggcctg atgtttctga tttcactgat 1680
tccgttcgag atcctaaaac atctgaaata ttagacattt caccttgccg ttttgggggt 1740
25 gtaagcttag ttaacctggg aacaaatgct cctatctaag ttgctgttct atatcaagat 1800
gttaactgca ctgatgtttc tacagcaatt catgcagatc aactcacacc agcttggcgc 1860
atatattcta ctggaaacaa tgtattccag actcaagcag gctgtcttat aggagctgag 1920
catgtcgaca cttcttatga gtgcgacatt cctattggag ctggcatttg tgctagttaa 1980
catacagttt ctttattacg tagtactagc caaaaatcta ttgtggctta tactatgtct 2040
ttaggtgctg atagtccaat tgcttactct aataacacca ttgctatacc tactaacttt 2100
30 tcaattagca ttactacaga agtaatgcct gtttctatgg ctaaaacctc cgtagattgt 2160
aatatgtaca tctgcggaga ttctactgaa tgtgctaatt tgcttctcca atatggtagc 2220
ttttgcacac aaactaaatcg tgcactctca gctattgctg ctgaacagga tcgcaacaca 2280
cgtgaagtgt tcgctcaagt caaacaaatg tacaaaaacc caactttgaa atattttgggt 2340
35 ggttttaatt tttcacaaat attacctgac cctctaaagc caactaagag gtcttttatt 2400
gaggacttgc tctttaataa ggtgacactc gctgatgctg gcttcatgaa gcaatatggc 2460
gaatgccttag tgaatttaa tgcttagtg cgcagaagt caatggactt 2520
acagtgttgc cacctctgct cactgatgat atgattgctg cctacactgc tgctctagtt 2580
agtgggtactg ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640
40 gctatgcaaa tggcatatag gttcaatggc attggagtta cccaaaatgt tctctatgag 2700
aaccaaaac aaatcgccaa ccaatttaac aaggcgatta gtcaaatca agaatacatt 2760
acaacaacat caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820
ttaaacacac ttgttaacaa acttagctct aattttgggt caatttcaag tgtgctaaat 2880
gatatccttt cgcgacttga taaagtcgag gcggaagtac aaattgacag gtttaattaca 2940
45 ggagactttc aaagccttca aacctatgta acacaacaac taatcagggc tgctgaaatc 3000
agggcttctg ctaatcttgc tgctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060
agagttgact tttgtggaag gggctaccac cttatgtcct tcccacaagc agccccgcac 3120
ggtgttgtct tcctacatgt cacgtatgtg ccattcccagg agaggaactt caccacagcg 3180
ccagcaattt gtcatgaagg caaagcatat ttccctcgtg aagggtgttt ttgtgttaat 3240
ggcacttctt ggtttattac acagaggaac ttcttttctc cacaaataat tactacagac 3300
50 aatacatttg tctcaggaag ttgtgatgtc gttattggca tcattaacaa cacagtttat 3360
gatcctctgc aacctgagct tgactcattc aaagaagagc tggacaagta cttcaaaaat 3420
catacatcac cagatgttga tcttggcgac atttcaggca ttaacgcttc tgcgtcaac 3480
attcaaaaag aaattgaccg cctcaatgag gtcgctaaaa atttaaatga atcactcatt 3540
55 gaccttcaag aattgggaaa atatgagcaa tatattaaat ggccttggtg tgtttggctc 3600
ggcttcattg ctggactaat tgccatcgct atgggtacaa tcttgctttg ttgcatgact 3660
agttgttgca gttgcctcaa ggggtgcagc tcttgtggtt cttgctgcaa gttttagtag 3720
gatgactctg agccagttct caagggtgtc aaattacatt acacataa 3768

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

60 SequenceName : SEQ ID 655

SequenceDescription :

Sequence

-----

65 &lt;213&gt; OrganismName : SARS coronavirus GD01

&lt;400&gt; PreSequenceString :

atgtttattt tcttattatt tcttactctc actagtggta gtgaccttga ccgggtgcacc 60

actttttgatg atgtttcaagc tcctaattac actcaacata cttcatctat gagggggggtt 120  
 tactatccctg atgaaatttt tagatcagac actottttatt taactcagga tttatattctt 180  
 ccatttttatt ctaatgttac aggggtttcat actattaatc atacgtttga caacctgtc 240  
 atacottttta aggatgggtat ttatttttgc gccacagaga aatcaaatgt tgtccgtgggt 300  
 5 tgggttttttg gttctaccat gaacaacaag tcacagtcgg tgattattat taacaattct 360  
 actaatgttg ttatacgagc atgtaacttt gaattgtgtg acaacctttt ctttgcgtgtt 420  
 tctaaaccca tgggtacaca gacacatact atgatattcg ataatgcatt taattgcact 480  
 ttcgagttaca tatctgatgc ctttttcgctt gatgtttcag aaaagtcagg taatttttaa 540  
 cacttacgag agtttgtgtt taaaaataaa gatgggtttc tctatgttta taagggtctat 600  
 10 caacctatag atgtagtctg tgatctacct tctgggtttta acactttgaa acccattttt 660  
 aagttgcctc ttgggtattaa cattacaaat ttttagagcca ttcttacagc cttttttacct 720  
 gctcaagaca cttggggcac gtcagctgca gctatttttg ttggctattt aaagccaact 780  
 acattttatgc tcaagtatga tgaaaatggg acaatcacag atgctgttga ttgttctcaa 840  
 aatccacttg ctgaactcaa atgctctgtt aagagctttg agattgacaa aggaattttac 900  
 15 cagacctcta atttcagggg tgttccctca agagatgttg tgagattccc taatattaca 960  
 aactgtgtgtc attttggaga gggtttttaa tcccttctgt ctatgcattg 1020  
 gagaggaaaa gaatttctaa ttgtgtgtgt gattactctg tgctctacaa ctcaacattt 1080  
 ttttcaacct ttaagtgtca tggcgtttct gccactaagt tgaatgatct ttgcttctcc 1140  
 aatgtctatg cagattcttt tgtagtcaag ggagatgatg taagacaaat agcgcaggga 1200  
 20 caaatgtgtg ttgtgctga ttataattat aaattgccag atgatttcat ggtttgtgtc 1260  
 cttgcttgga atactaggaa cattgatgct acttcaactg gtaattataa ttataaatat 1320  
 aggtatctta gacatggcaa gcttagggccc tttgagagag acatatctaa tgtgcctttc 1380  
 tcccttgatg gcaaaccttg caccaccact gctcttaatt gttattggcc attaaatgat 1440  
 tatggttttt acaccactac tggcattggc taccacacct acagagtgtg agtactttct 1500  
 25 tatgaacttt taaatgcacc ggccacgggt ttgtggacca aattatccac tgacctattt 1560  
 aagaaccagt gtgtcaattt taattttaat ggaactcact gtaactggtt gtttaactcct 1620  
 tottcaaaga gatttcaacc atttcaacaa tttggcctg atgtttctga tttcactgat 1680  
 tocgttcgag atcctaaaac atctgaaata ttagacattt cacttgcctc ttttgggggt 1740  
 gtaagtgtaa ttacacctgg aacaaatgct tcatctgaag ttgctgttct atatcaagat 1800  
 30 gtttaactgca ctgatgtttc tacagcaatt catgcagatc aactcacacc agcttggcgc 1860  
 atatatctta ctggaaacaa tgtattccag actcaagcag gctgtcttat aggagctgag 1920  
 cctatgtgaca atccttatga ttctgaactt ctgttgagag ctggcatttg tgctagttaa 1980  
 catacagttt ctttattacg tagtactagc caaaaatcta ttgtggctta tactatgtct 2040  
 ttaggtgctg atagttcaat tgcttactct aataacacca ttgctatacc tactaacttt 2100  
 35 tcaattagca ttactacaga agtaatgcct gtttctatgg ctaaaacctc cgtagattgt 2160  
 aatatgtaca atcctggaga ttctactgaa tgtgctaaat tgcttctcca atatggtatg 2220  
 ttttgcacac aactaaatcg tgcactctca ggtattgctg ctgaacagga tcgcaacaca 2280  
 cgtgaagtgt togtcctaat caaacaatg tacaaaacc caactttgaa agatttttgg 2340  
 40 ggttttaatt tttcacaaat attacctgac cctctaaagt caactaagag gtcttttatt 2400  
 gaggacttgc cttcttaataa ggtgacactc gcttagtctg gcttcatgaa gcaatatggc 2460  
 gaatgcctag gtgatattaa tgctagagat ctcatgtgtg cgcagaagtt caatggactt 2520  
 acagtgttgc cactctgct cactgatgat atgattgctg cctacactgc tgctctagtt 2580  
 agtgggtactg ccactgctgg atggacattt ggtgctggcg ctgctcttca aatacctttt 2640  
 45 gctatgcaaa tggcatatag gttcaatggc attggagtta cccaaaatgt tctctatgag 2700  
 aacaaaaaac aaatcgccaa ccaatttaac aaggcgatta gtcaaatcca agaactcatt 2760  
 acaacaacat caactgcatt gggcaagctg caagacgttg ttaaccagaa tgctcaagca 2820  
 ttaaacacac ttgttaaaaca acttagctct aattttggtg caatttcaag tgtgctaaat 2880  
 gatattcctt cgcgacttga taaagtcgag gctgaggtac aaattgacag gtttaattaca 2940  
 50 ggcagacttc aaagccttca aacctatgta acacaacaac taatcagggc tgctgaaatc 3000  
 agggcttctg ctaatcttgc tgctactaaa atgtctgagt gtgttcttgg acaatcaaaa 3060  
 agagttgact tttgcggaaa gggctaccac cttatgtcct tcccacaagc agccccgcct 3120  
 ggtgttgtct tctacatgt cactatgtg ccatcccagg agaggaactt caccacagcg 3180  
 ccagcaattt gtcattgaagg caaagcatac ttccctcgtg aaggtgtttt tgtgtttaat 3240  
 55 ggcacttctt ggtttattac acagaggaac ttcttttctc cacaaataat tactacagac 3300  
 aatacatttg tctcaggaaa ttgtgatgtc gttattggca tcattaacaa cacagtttat 3360  
 gatcctctg aacctgagct tgactcattc aaagaagagc tggacaagta cttcaaaaat 3420  
 catacatcac cagatgttga tcttggcgac atttcaggca ttaacgcttc tgtcgtcaac 3480  
 attcaaaaag aaattgaccg cctcaatgag gtcgctaaaa atttaaatga atcactcatt 3540  
 60 gaccttcaag aattgggaaa atatagagcaa tatattaaat ggccttggta tgtttggctc 3600  
 ggcttctatg ctggactaat tgccatcgct atgggtacaa tcttgccttg ttgcatgact 3660  
 agttgttgca gttgcctcaa ggggtgcatt ctttgggtt cttgctgcaa gtttgatgag 3720  
 gatgactctg agccagttct caagggtgtc aaattacatt acacataa 3768  
 <212> Type : DNA  
 <211> Length : 3768  
 65 SequenceName : SEQ ID 656  
 SequenceDescription :



## Sequence

-----

&lt;213&gt; OrganismName : SARS coronavirus CUHK-W1

&lt;400&gt; PreSequenceString :

5	atgtttattt	tcttattatt	tcttactctc	actagtggta	gtgaccttga	ccgggtgcacc	60
	actttttgatg	atgtttcaagc	tcctaattac	actcaacata	cttcacttat	gagggggggtt	120
	tactatcctg	atgaaatttt	tagatcagac	actctttatt	taactcagga	tttattttctt	180
	ccatttttatt	ctaattgttac	aggggttcat	actattaatc	ataggtttga	caaccctgtc	240
	atacctttta	aggatgggat	ttattttgct	gccacagaga	aatcaaatgt	tgtccgtgggt	300
10	tgggttttttg	gttctaccat	gaacaacaag	tcacagtcgg	tgattattat	taacaattct	360
	actaatgttg	ttatacgagc	atgtaacttt	gaattgtgtg	acaacccttt	ctttgctgtt	420
	tctaaccoca	tgggtacaca	gacacatact	atgatattcg	ataatgcatt	taattgcact	480
	ttcgagtaca	tatctgatgc	cttttcgctt	gatgtttcag	aaaagtcagg	taattttaaa	540
	cacttacgag	agtttgtgtt	taaaaataaa	gatgggtttc	tctatgttta	taagggtctat	600
15	caacctatag	atgtagtctg	tgatctacct	tctgggttta	acactttgaa	acctattttt	660
	aagttctctc	ttgttattaa	cattacaacat	tcttagacca	ttcttacagc	cttttcacct	720
	gctcaagaca	cttggggcac	gtcagctgca	gcctattttg	ttggctattt	aaagccaact	780
	acattttatgc	tcaagtatga	tgaanaatgg	acaatcacag	atgctgttga	ttgttctcaa	840
	aatccacttg	ctgaactcaa	atgctctgtt	aagagctttg	agattgacaa	aggaatttac	900
20	cagacactga	tgttccctca	ggagatgttg	tgagattccc	taataattaca		960
	aacttgtgtc	cttttggaga	gggttttaaa	gctactaaat	tcccttctgt	ctatgcatgg	1020
	gagagaaaaa	aaattttctaa	ttgtgttgct	gattactctg	tgctctacaa	ctcaacattt	1080
	ttttcaacct	ttaagtgtca	tggcgtttct	gccactaagt	tgaatgatct	ttgcttctcc	1140
	aatgctctga	ctagattctt	tgtagtcagg	taagacaaat	agcgccagga		1200
25	caactgggtg	ttattgtctga	ttataattat	aaattgccag	atgatttcat	gggttgtgtc	1260
	cttgcttgga	atactaggaa	cattgatgct	acttcaactg	gtaattataa	ttataaatat	1320
	aggtagctta	gacatggcaa	gcttagggcc	tttgagagag	acatatctaa	tgtgcctttc	1380
	tccctctgat	gcaaaccttg	cacccacact	gctcttaatt	gttattggcc	attaaatgat	1440
	tatgggtttt	acaccactac	tggcattggc	taccaacctt	acagagttgt	agtactttct	1500
30	tttgaacttt	taaatgcacc	ggccacgggt	tgtggaccaa	aattatccac	tgaccttatt	1560
	aagaaccagt	gtgtcaattt	taattttta	ggactcactg	gtactgggtg	gttaactcct	1620
	tcttcaaaga	gtattcaacc	atttcaacaa	tttggcgtg	atgtttctga	tttactgat	1680
	tccgttcgag	atcctaaaac	atctgaata	ttagacattt	caccttgctc	ttttgggggt	1740
	gtaagtgtaa	ttacacctgg	aacaaatgct	tcacttgaag	ttgctgttct	atatcaagat	1800
35	gttaactgca	ctgatgtttc	tacagcaatt	catgcagatc	aactcacacc	agcttggcgc	1860
	atatattcta	ttgaaacaa	tgattccag	ctgtcttat	aggagctgag		1920
	catgtcgaca	cttcttatga	gtgcgacatt	cctattggag	ctggcatttg	tgctagttac	1980
	catacagttt	ctttattacg	tagtactagc	caaaaatcta	ttgtggctta	tactatgtct	2040
	ttaggtgtctg	atagtccaat	tgcttactct	aataacacca	ttgctatacc	tactaacttt	2100
40	tcaattagca	ttgtacaga	agtaatgcct	gttcttatgg	ctaaaacctc	cgtagattgt	2160
	aatatgtaca	tctgcggaga	ttctactgaa	tgtgctaatt	tgcttctcca	atatggtagc	2220
	ttttgcacac	aactaaatcg	tgcactctca	ggtattgctg	ctgaacagga	tcgcaacaca	2280
	cgtgaagtgt	tcgctcaagt	caaacaaatg	tacaaaaccc	caactttgaa	atatttttgt	2340
	gggttttaatt	tttcacaaat	attacctgac	ctctaaagc	caactaagag	gtccttttat	2400
45	gaggacttgc	tctttaataa	ggtgacactc	gctgatgctg	gcttcatgaa	gcaatatggc	2460
	gaatgcctag	gtgatattaa	tgctagagat	ctcatttgtg	cgcagaagtt	caatggactt	2520
	acagtgttgc	ccactctgct	cactgatgat	atgattgctg	cctacactgc	tgctctagtt	2580
	agtggtagctg	ccactgctgg	atggacattt	ggtgctggcg	ctgctcttca	aatacctttt	2640
	gctatgcaaa	tggcatatag	gttcaatggc	attggagtta	ccaaaatgt	tctctatgag	2700
50	aacaaaaaac	aaatcgccaa	ccaatttaac	aaggcgatta	gtcaaatcca	agaatcactt	2760
	acaacaacat	caactgcatt	gggcaagctg	caagacgttg	ttaaccagaa	tgctcaagca	2820
	ttaaacacac	ttgttaaaac	acttagctct	aatttttggtg	caatttcaag	tgtgctaaat	2880
	gatatacctt	cgcgacttga	taaagtgcag	gcggagggtac	aaattgacag	gttaattaca	2940
	ggcagacttc	aaagccttca	aacctatgta	acacaacaac	taatcagggc	tgctgaaatc	3000
55	agggcttctg	ctaactctgc	tgctactaaa	atgtctgagt	gtgttcttgg	acaatcaaaa	3060
	agagttgact	tttgggaaa	gggctaccac	cctatgtcct	tcccacaagc	agccccgcac	3120
	ggtgttgtct	tcctacatgt	cacgtatgtg	ccatcccagg	agaggaactt	caccacagcg	3180
	ccagcaattt	gtcatgaagg	caaagcatac	ttccctcgtg	aagggttttt	tgtgtttaat	3240
	ggcacttctt	ggtttattac	acagaggaac	ttcttttctc	cacaaataat	tactacagac	3300
60	aatacatttg	tctcaggaaa	ttgtgatgtc	gttattggca	tcattaacaa	cacagtttat	3360
	gatacctctgc	aacctgagct	tgactcattc	aaagaagagc	tggacaagta	cttcaaaaat	3420
	catacatcac	cagatgttga	tcttggcgac	atttcaggca	ttaacgcttc	tgtcgtcaac	3480
	attcaaaaag	aaattgaccg	cctcaatgag	gtcgttaaaa	atttaaatga	atcactcatt	3540
	gaccttcaag	aattgggaaa	atatgagcaa	tatatataat	ggccttggta	tgtttggctc	3600
65	ggcttcattg	ctggactaat	tgccatcgtc	atgggtacaa	tcttgctttg	ttgcatgact	3660
	agttgttgca	gttgccctca	gggtgcattg	tcttgtggtt	cttgctgcaa	gtttgatgag	3720
	gatgactctg	agccagttct	caaggggtgtc	aaattacatt	acacataaa		3768

<212> Type : DNA  
 <211> Length : 3768  
 SequenceName : SEQ ID 657  
 SequenceDescription :

5

Sequence

&lt;213&gt; OrganismName : SARS coronavirus BJ01

&lt;400&gt; PreSequenceString :

10	atgttttattt	tcttattatt	tcttactctc	actagtggta	gtgaccttga	cgggtgcacc	60
	acttttgatg	atgttcaagc	tcctaattac	actcaacata	cttcatctat	gagggggggt	120
	tactatcttg	atgaaatfff	tagatcagac	actctttatt	taactcagga	tttatttctt	180
	ccatttttatt	ctaagtgtac	agggtttcat	actattaatc	atacgtttga	caaccctgtc	240
	ataccttttta	aggatgggat	ttattttgct	gccacagaga	aatcaaatgt	tgtccgtggg	300
15	tgggtttttg	gttctacat	gaacaacaag	tcacagtcgg	tgattattat	taacaattct	360
	actaatgttg	ttatacgagc	atgtaacttt	gaattgtgtg	acaacccttt	ctttgctgtt	420
	tctaaaccca	tgggtacaca	gacacatact	atgatattcg	ataatgcatt	taattgcaact	480
	ttcgagtaca	tatctgatgc	cttttctgct	gatgtttcag	aaaagtcagg	taatttttaa	540
	cacttacgag	agttttgtgt	taaaaataaa	gatgggtttc	tctatgttta	taagggtcat	600
20	caacctatga	ttgaagtctg	tgatctacct	tctgtgttta	acactttgaa	acctattttt	660
	aagttgcctc	ttggtattaa	cattacaaat	tttagagcca	ttcttacagc	cttttcacct	720
	gctcaagaca	cttggggcac	gtcagctgca	gcctattttg	ttggctattt	aaagccaact	780
	acattttatgc	tcaagtatga	tgaatatggg	acaatcacag	atgctgttga	ttgttctcaa	840
	aatccacttg	ctgaagtcaa	atgctctgtt	agagcgtttg	agattgacaa	aggaattttac	900
25	cagacctcta	atttccaggg	tgttccctca	ggagatgttg	tgagattccc	taattattaca	960
	aacttgtgtc	cttttgagga	ggtttttaat	gctactaaat	tcccttctgt	ctatgcatgg	1020
	gagagaaaaa	aaatttctaa	ttgtgttgct	gattactctg	tgctctacaa	ctcaacattt	1080
	ttttcaacct	ttaagtgtca	tggcgtttct	gccactaaat	tgaatgatct	ttgcttctcc	1140
	aatgtctatg	cagattcttt	tgtagtcaag	ggagatgatg	taagacaaat	agcgccagga	1200
30	caaactgggtg	ttattgtctga	ttataaattat	aaattggccag	atgatttcat	gggttgtgtc	1260
	cttgccttga	atactaggaa	cattgatgct	acttcaactg	gtaattataa	ttataaatat	1320
	aggtatctga	gacatggcaa	gcttaggccc	tttgagagag	acatatctaa	tgtgcctttc	1380
	tccccctgatg	gcaaaccttg	cacccacact	gctcttaatt	gttattggcc	attaaatgat	1440
	tatgggttttt	acaccactac	tggcatttggc	taccaacott	acagagttgt	agtactttct	1500
35	tttgaacttt	taaatgcacc	ggccacgggt	tgtggaccaa	aattatccac	tgaccttatt	1560
	aagaaccagtg	gtgtcaattt	taattttaat	ggactcaactg	gtactgggtg	gttaactcct	1620
	tcttcaaaga	gatttcaacc	atttcaacaa	tttggccgtg	atgtttctga	tttactgat	1680
	tcogttcgag	atcctaaaac	atctgaata	ttagacattt	caccttgctc	ttttgggggt	1740
	gtaagtgtaa	ttcacacttg	aacaaatgct	tcatctgaag	ttgctgttct	atatcaagat	1800
40	gttaactgtca	ctagatgttc	tacagcaatt	cctgcagatc	aactcacacc	agcttggcgc	1860
	atatatttcta	ctggaaacaa	tgtattccag	actcaagcag	gctgtcttat	aggagctgag	1920
	catgtcgaca	cttcttatga	gtgctgacatt	cctattggag	ctggcatttg	tgctagttac	1980
	catacagttt	ctttattacg	tagtactagc	caaaaatcta	ttgtggctta	tactatgtct	2040
	ttaggtgtctg	atagttcaat	tgcttactct	tgtacaccca	ttgctatacc	tactaacttt	2100
45	tcaattagca	ttactacaga	agtaatgcct	gtttctatgg	ctaaaacctc	cgtagattgt	2160
	aatatgtaca	tctgcggaga	ttctactgaa	tgtgctaatt	tgcttctcca	atatggtagc	2220
	ttttgcacac	aactaaatcg	tgcactctca	ggatttgcgt	ctgaacagga	tcgcaacaca	2280
	cgtgaagtgt	tcgctcaagt	caaacaaatg	tacaaaaccc	caactttgaa	atattttggg	2340
	ggtttttaatt	tttcacaaat	attacctgac	cctctaaagc	caactaagag	gtcttttatt	2400
50	gaggacttgc	tctttaataa	ggtgacactc	gctgatgctg	gcttcatgaa	gcaatatggc	2460
	gaatgcctag	gtgatattaa	tgctagagat	ctcattttgtg	cgcagaagtt	caatggactt	2520
	acagtgttgc	cacctctgct	cactgatgat	atgattgctg	cctacactgc	tgctctagtt	2580
	agtgggtactg	ccactgtctg	atggacattt	gggtgctggc	ctgctcttca	aatacctttt	2640
	gctatgcaaa	tggcatatag	gttcaatggc	attggagtta	cccaaatgt	tctctatgag	2700
55	aaccaaaaac	aaatcgccaa	ccaattttac	aaggcgatta	gtcaaatcca	agaatcactt	2760
	acaacaacat	caactgcatt	gggcaagctg	caagacgttg	ttaaccagaa	tgctcaagca	2820
	ttaaacacac	ttgtttaaca	acttagctct	aattttgggtg	caatttcaag	tgtgctaaat	2880
	gatatacctt	cgcgacttga	taaagtcgag	gctgaggtac	aaattgacag	gttaattaca	2940
	ggcagacttc	aaagccttca	aacctatgta	acacaacaac	taatcagggc	tgctgaaatc	3000
60	agggcttctg	ctaactcttg	tgctactaaa	atgtctgagt	gtgttcttgg	acaatcaaaa	3060
	agagttgact	tttgtggaaa	gggctaccac	cttatgtcct	tcccacaagc	agccccgcac	3120
	ggtgttgtct	tcctacatgt	cacgtatgtg	ccatcccagg	agaggaaact	caccacagcg	3180
	ccagcaattt	gtcatgaagg	caaagcatat	ttccctcgtg	aagggtgttt	tgtgtttaat	3240
	ggcacttctt	ggtttattac	acagaggaac	tctttttctc	cacaataaat	tactacagac	3300
65	aatacatttg	tctcaggaaa	ttgtgatgtc	gttattggca	tcattaacaa	cacagtttat	3360
	gatcctctgc	aacctgagct	tgactcattc	aaagaagagc	tggacaagta	cttcaaaaat	3420
	catacatcac	cagatgttga	tcttggcgac	atttcaggca	ttaacgcttc	tgtcgtcaac	3480

```

attcaaaaaag aaattgaccg cctcaatgag gtcgctaaaa atttaaatga atcactcatt 3540
gaccttcaag aattgggaaa atatgagcaa tatattaaat ggccttggta tgtttggctc 3600
ggcttcattg ctggactaat tggcatcgtc atgggtacaa tcttgctttg ttgcatgact 3660
agttgtttga gttgcctcaa ggggtgcatgc tcttggtggt cttgctgcaa gtttgatgag 3720
5 gatgactctg agccagtctt caagggtgct aaattacatt acacataa 3768
<212> Type : DNA
<211> Length : 3768
      SequenceName : SEQ ID 658
      SequenceDescription :

10
Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
15 <400> PreSequenceString :
atgaacaaaa tatttaaagt tatctggaac cctgcgacag ggaattatac tgttaccagc 60
gaaacggcaa aaagccgtgg caagaaatct gggcgagta agctgttaat ttctgcgctg 120
gttcggtgtg gaattgtgtc gtcgtttggg gcattggcga atgccgggaa tgacaacggg 180
caggggtgtg attacggtag tggatcagct ggcgacggct ggggtgctat aggcaaaggg 240
20 gcgaaagcaa atacttttat gaacaccagt gggtccagta ctgctgtggg ttatgacgct
atagctgaag gccaatatag ctctgccatc ggggtcaaaaa cccatgcgat tgggtggtgca 360
tcaatggcct ttgggggttag tgcaatatca gaaggcgata gaagtatagc actgggtgccc 420
tcttcgtatt cttggggcca atactcaatg gccctcgccc gttattcaaa agcattgggtg 480
aaattgtcta ttgctatggg ggactcttcc aaagcgggaag gagcaaacgc cattgcccctg 540
25 ggaaatgcca ctaaagctac tgagattatg agtattgtct ttggcgacac cgccaatgcg
tcaaaagcgt attcaatggc gctgggagca agtagcgctc catctgaaga aaacgctatt 660
gcgataggtg ctgagaccga agccgctgaa aatgcaactg ctattggcaa taatgcgaag 720
gcgaaaggga ccaatagcat ggcaatgggg ttcggaagcc ttgccgataa agtcaatact 780
atcgccattag gaaatggcag ccaggctctg gcagataatg caatcgccat aggccagggc 840
30 aacaaagctg atggcggtga tgccatcgct ctgggtaatg gtagccagtc gagaggctta
aacaccattg ccttaggcac agccagtaat gcaactgggt ataagagtct tgcgcttggt 960
agtaatagca gttacacagg tattaactct gtcgagctgg gcgcagattc cattgcccgt 1020
ttagacaata ccgtctctgt cggaatagt tcattaaaa gcaagatcgt taatgtgaaa 1080
aatggcgcgga tcaagtctga cagttacgat gccattaatg gttcacagct ttatgccatt 1140
35 agcgactcgg tagcaaaaag gcttggagga ggggctgcag tagatgttga tgacggtact
gttaacagca ccaatagcaa tttaaaaaat agtcgcaaaa ataacgtagg ggctgcgctc 1260
gctgtacttg atgaaaacac cctgcaatgg gaccaaacca aaggcaataa cagcgctgct 1320
catggtacta gtagcccaac tgcagcgta atcaccgatg ttgcggatgg cagcatttca 1380
gcctccagta aggatgcggt taacgggttc caactgaaag ctaccaatga cgatgtcgaa 1440
40 gccaacacgg ccaatctgc tactaatcc acagcatctg ccacgaatac ggcaaatatt
gccaccaata ccaccaatat caccaacctg acggattccg ttggtgacct tcaggetgat 1560
gcccgtctct ggaacgaaac taaaaaggca ttcagtgcag ctacggcca ggataaccac 1620
agcaaaatca ccaacgttaa agatgccgac ctgacggctg acagcactga tgcgtgtaac 1680
45 ggctctcagc tgaaaaccac caacgatgct ttggcgacga ataccacca tatcgccaat 1740
aacacttcca atattgccac taacaccacc aacatctcta acctgactga gacggtgact 1800
aatcttgggt aggatgcgct gaaatgggat aaggacaatg gtgtattcac gccagctcat 1860
ggcaccgaga ccaccagcaa aatcaccaac gttaaagatg gcgacctgac gactggcagc 1920
accgatgcgg ttaacgggct tcagctgaaa accaccaacg atgccgtggc gacgaatacc 1980
accaaatacg ccactaacac caccaacatc tctaacttga ctgagacggg gactaatctt 2040
50 ggtgaggatg cgtgaaatg ggataaggac aatggtgtct tcaactgcag tcatggcaac
aataccgcca gcaaaatcac caatatcctg gacggcacag tcaactgcaac cagttccgat 2160
gccattaacg ctagccagct ttatgactta agcagcaata tcgccacctt cttcggcggc 2220
aatgcttctg tgaatactga cgggtgtgtt accgggtcca cctacaaaat cggtgaaaca 2280
aattattata acgtcggcga tgcactggct gcgattaaact cctcatttag cacgtctctc 2340
55 ggcgatgctc tgccttggga tgccaccgca ggtaaattca gtgccaaaca cgggtactaat
ggtgacgcaa gcgtgatcac tgatgtcgca gatggtgaaa tttcagactc cagttctgac 2460
gcagtaaacc gctcacaaact ccacggcgct agcagttatg ttgttgatgc gctggggggg 2520
ggtgcggaag tcaatgcaga cggcaccatc actgcgccga cgtacaccat tgctaagtct 2580
gattacgata atgtcgggtga tgccctgaat gctatcgata ccactcttga cgacgctctg 2640
60 ctctgggatg cggatgcggg tgaaaatggt gcattttagc ccgctcacgg aaaagataaa 2700
actgccagtg taatcactaa cgtcgctaac ggtgcaatct ctgctgccag cagcgacgcg 2760
attaacgggt cacaactcta taccaccaat aagtacatcg ctgatgcgct ggggtggtgac 2820
gcagaagtca acgctgacgg caccatcacc gcaccgactt acaccattgc gaacgccgag 2880
tacaacaacg tcggtgacgc cctggatgata acgcctgct gtgggatgag 2940
65 actgccaatg gcggtgctgg agcctacaat gccagccatg acggtaaaag cagcatcatc 3000
actaatgtcg ctaatggcag tattagttag gacagtaccg atgcagtga cggttctcag 3060
ttgaatgcga cgaatatgat gattgagcag aacacccaaa ttatcaatca gtcgctgggt 3120

```

aacaccgacg caacctatat ccaagaaaaac ggtgcgggta ttaactatgt gcgtactaac 3180  
 gacgacggct tagcggttaa cgacgccagc gcacaggggtg ttggcgctac agctataggt 3240  
 tataactctg tcgccaaggc ctagcagcagc gtagctattg gtcagggcag ctacagcgac 3300  
 gttgatacgg gtatcgccct gggtagcagc tctgtttcca gccgagtgat tgccaaaggc 3360  
 5 tcccgtagaca ccagcataac ggaaaaatggc gttgttattg gttacgacac cacggatggc 3420  
 gaactgctcg gtgcattgtc tatcggtgat gacggtaaat atcgtaaaat catcaacgta 3480  
 gccgatgggt ccgaagccca tgacgccgtt acggttcgtc aattgcagaa tgcgattggg 3540  
 gcggtcgcaa ccacgccgac taaatacttc cacgctaatt caacggaaga agattcactg 3600  
 gcagtgggaa ctgactcgct ggcaatgggt gcgaaaacca tcgtgaatgg cgataaagg 3660  
 10 attgggtatcg gttatgggtc ctacgtggac gcgaatgcac ttaacggcat tgccattgg 3720  
 agcaatggcg aagtcaattc tgtcaacagt attgcgatag gtaatgggtc tacgaccact 3780  
 cgtggcgctc aaaccaatta taccgcctac aacatggacg caccgcagaa ctctgtcgg 3840  
 gaattctcag tcggtagtgc ggatgggtcaa cgtcagatca ctaacgtcgc agcagggttc 3900  
 gctgataccg atgcggtcaa cgtgggtcag ttgaaagtaa cggatgcgca ggtttccag 3960  
 15 aataccaga gcattactaa cctggataat cgggtaacga atcttgattc acgcgtcacc 4020  
 aatatcgaaa accgtattgg ccatatcgctc aacacggta gcaccaagta cttcaagacc 4080  
 aataccgatg gtgtagatgc cagcgcgcag ggtaagata gcgtcgcgat tggttccggc 4140  
 tccattgctg ccgctgacaa cagcgtcgct ctgggtacag ggtctgtggc aaccgaagaa 4200  
 aatacgatct ctgtagggtc ctctactaac caacgtcgta tcaccaacgt agctgcagg 4260  
 20 aaaaatgcta ccgatgctgt taacgtggca cagttgaagt cttccgaagc tggcggtgta 4320  
 cgttacgaca ccaaagctga tgggtctatc gactatagca atatcaccct cgggtggcggc 4380  
 aacggcggtg cgactcgtat cagcaacgtc tccgctggcg tcaacaacaa cgacgtggtg 4440  
 aattacgcgc agttgaagca aagcgtgcag gaaacgaagc aatacaccga tcagcgaatg 4500  
 gttgagatgg ataacaact gtctaaaagt gaaagcaagt tgagcgggtg tatcgcttct 4560  
 25 gcaatggcaa tgaccggtct gccgcaggct tacactccag gtgccagcat ggctctatt 4620  
 ggtggcggtg cttacaacgg tgaatcggca gttgctttag gtgtatcgat ggtgagcgcc 4680  
 aatggctcgt gggtctacaa attacaagggt agtaccaata gccagggtga atactccgcc 4740  
 gcactcggtg ccggtattca gtggttaa 4767  
 <212> Type : DNA  
 30 <211> Length : 4767  
 SequenceName : SEQ ID 659  
 SequenceDescription :

## Sequence

35 -----  
 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
 gtgccagctt ccgcagtagg tgcgtggggc gaagccagct acacggtgac ggccaacgtc 60  
 accgacagcg caggcaacag caattccgcc agccataacg tgcagggtcaa taccgcgctg 120  
 40 cctggcgtca ccattaaccc agttgcgacc gacgatatta ttaacgccgc cgaatcgggc 180  
 aatgcgcaaa ccacagcggc ccagggtgacg gggggcggcg cgggcgatac gggtaccgta 240  
 acgcttggcg ggaaaaactta caccgctacc gtgcagggga atttaagctg gagcgtggac 300  
 gttccggcgg cggatattca ggccatcggc aatggcaatc tgacgggttaa cgcttcgggtg 360  
 accaacggcg ttggcaatac tggcagcggg tgcgagata ttaactatcg cgccaacgtg 420  
 45 ccaggctctgc gcgttgacac cgtggcgggc gatgatgtgg tcaatagcat cgagcacgct 480  
 caggcgctgg tgataactgg tagcagcagc gggctggcgg cgggcgcggc gctgacgggtg 540  
 gtgattaaca cggctactta cgtgcaaca gtattagccg atggcacatg gagcgttggg 600  
 gttccggcgg cagacgtgag taactggcct gcgggtacgg gcaaatcac ggtaagtggc 660  
 actaacacag ccggaacaac atccaccatc acccatccgg tcaccgtcga tctggcggcg 720  
 50 gtggcgattt ccattaacac cgtttccggc gacgatgtga ttaacgccgc cgaaaaaggg 780  
 gcagatttaa ccctttccgg cagcacctcc ggcgtggaag tggggcaaac ggtcacggtt 840  
 acctttggcg ggaaaaacct caccgctacc gtacggggcg atggtagctg gacaaccacc 900  
 gtaccgcggc ccgatctcag cgtgttacgc gacggcgacg ccaccgtgca ggccagcgtc 960  
 agcactatta acggcaacac ggcttcggca acccacgcct acagcgtcga tgccacggcc 1020  
 55 ccgacgcttg ccattaacac catcgccacc gacgatattc tgaacgctgc cgaggcgggc 1080  
 aatccgttaa ccatcagcgg tagcagcacc gccgaagcgg gcgagacggg aaccgtcacg 1140  
 cttaatgggtg tgacttacag cggctccgtc caggcggacg gcagctggag cgtcagctta 1200  
 ccgacggcgg atctcagcaa tctgaccgcc agccagtaga ccgttagtgc ctcggttaagc 1260  
 gataaagcgg ttaacccggc gtccgctaac cacgggctgg cgggtggatct caccgtgccg 1320  
 60 gtgctgacca tcaaaccggt ctccggcgat gacgatatta acgcccga acacggacag 1380  
 gcgctgggtga tctccggctc cagcactggc ggcaagcgg gtgatgtcat caccgtcaca 1440  
 ctaaacagta aaactacac caccatgctg gacgcttccg gcaactggag cgtcggcggt 1500  
 ccggcggtcg acgtcactgc gcttggcagc ggcccgcgaa ctatcactgc ggcaattacc 1560  
 gacgcggcag gcaacacgca tgacgcagcg cgcacgggtc ccgtgaatct cgccgcgcca 1620  
 65 accattgggt tcaacaccat cgccaccgat gacgtgatta aagccacgga aaaaggcggc 1680  
 gacctgcaaa tcaccggcac cagtaatcag cctgcccggc ccaccattac ggtgacgctg 1740  
 aacgggcaaa attacaccgc tactaccgat agcaacggca actggagcgc cacggtgcca 1800

	gcgtcagcgg	ttagcgcatt	gggtgaagcc	aactacacgg	taacggcaaa	cgtcactgat	1860
	acggcagggca	acagtaattc	cgccagtcac	aattgtgctgg	tcaacagcgc	cttgccctgcc	1920
	gttaccatta	acgcgggtggc	gactgacgat	attattaacg	ctgccgaatc	gggaaatgcg	1980
	caaaccatca	gcggggcagg	gacggggcgca	gcgcaggggg	atagcggttac	cggtacgctg	2040
5	ggcggcaaca	cctacaccgc	cacgggtgcag	tctaatttaa	gctggagtgt	ggacggtccg	2100
	gcggcgata	ttcaggcgct	gggcaacggc	gacgtgacgg	ttaatgcctc	ggtcaccaat	2160
	ggcgctcgga	acaccggcag	cggtctcgcg	gatatcacga	tcgacgccaa	tctgcctggc	2220
	ctgcgggtcg	ataccgtggc	ggcgcatgat	gttattaaca	gcattgagca	caatcaggcg	2280
	ctgggtgatca	ccggcagcag	cagcggtatta	acggcgggaa	cggcgttaac	ggtcgagatt	2340
10	aacaacgtta	cttatggcgc	gacgggtatta	gccgacggca	cgtaggagcct	cggtgttccg	2400
	gcggtagacg	tcagcaactg	gccagcgggt	acgggtgaata	tcacggtaag	cgccaccaac	2460
	agtgccggaa	caacctccac	cattaccatc	ccggttaccg	tcgatctggc	tggggctgcc	2520
	atcaccatta	acactctctc	tgggtgatgat	gtgatcaacg	ccgtcgaaaa	aggcgaaacg	2580
	ctggctcgtaa	gcggcagcac	cagcggtgtc	gaagccgggc	agacgggtgac	cgtcacgttt	2640
15	ggcggcaaaa	attacaccac	cacagtgga	gctaaccgta	gctggacggg	gaatgtgcgg	2700
	cctgcggatc	tgcgtcgct	accggacggc	tcgggcaacg	tgacggcgag	tgtagtaaat	2760
	attaacggca	acagcgccca	ggccgatcgc	gcgtatagcg	ttgatgccac	cgcccgctt	2820
	gtgaccatca	acaccatcgc	cagcgacgat	atccttaacg	tgagcgaagc	tggcgcgggg	2880
	atcaccatca	gcggcactac	cacggcgcac	gccggggcga	cgctcacctg	cacgtcfaat	2940
20	aacaacacgt	accagaccac	cggtctggcg	gatggcacct	ggagcgtgaa	tgttccggca	3000
	gcggattttaa	gcggattaac	cgccagcagt	tacaccgtga	ccgccacggg	gagcgacaaa	3060
	gcgggtaacc	cgccaagcgc	cgaccacgcg	ctgggtgtag	atatcactgc	gccggatctc	3120
	accattaaca	ccgtcggggg	cgatgacatt	atcaacgcca	tcgaacatgg	tcaggcgctg	3180
	gtggtcagcg	gcaccagtac	ggcgcgcgcg	gcgggtgtag	tggttaaccgt	cacgctgaac	3240
25	ggtaaaaact	acaccaccac	gctggatgcc	tccggtaact	ggagcgtggg	cattccggcg	3300
	gcggatgtca	cgccgctggc	gaccggtagc	cagaccatca	ccgccagcct	gagcgatcgc	3360
	gcgggcaaca	gcgacagcac	gactcacgat	gtgaccgttg	atccttagcgg	cccagcgtg	3420
	accattaaca	ccgtctccgg	cgatgacatt	atcaacggcg	ctgaaatcgt	tgtggcgcg	3480
	accatcagcg	gtcaggtcac	gggaacggcg	gttgccggga	atacgggat	tgtcaccatt	3540
30	ggcggcaatc	aataataacgc	caccgtgcag	tcagatttaa	gctggagcgt	cagcgatccg	3600
	gcgaacgttt	tgacggcgct	gggtaacggg	gaactgacca	tcagcgccct	gttgaccaat	3660
	tccgcaataa	ataccggcac	cgcgacgcac	gatatcgtag	tagatgccaa	cctgccaggt	3720
	ctgcgcgtcg	ataccgtggc	aggcgatgat	gtgattaaca	gcacgagca	cactcaggcg	3780
	ttgggtgatca	ccggtagcag	tagcggactg	gcggcgggcg	cggcgttgac	gggtggttat	3840
35	aatagcgtca	cctacggcgc	aacggtttta	gcggatggta	gctggagcgt	tggtgttccg	3900
	gtggccaatg	tcacaaactg	ccctgcgggg	gcgggtcaata	ttgcccgtct	tggaaccaac	3960
	accgcgggaa	ccacaaccag	cattagccat	ccgggtcacgg	tcgatctcgc	tgccgtggcg	4020
	atcaccatca	acaccctttc	cactgacgat	gtgattaacg	ccgccgagaa	aggctctgat	4080
	ttgcagctct	ccggcaccac	ctccggcggtg	gaagcggggc	aaaccatcac	cgttatcttc	4140
40	ggcggcaaaa	gctacaccac	cacggttgcc	gcggataata	cctgggggct	gacgatccct	4200
	gccgtcgatg	ttgcaacctt	gccagacggc	gcagcaaacg	tccaggccag	cgtagcaaat	4260
	gtcgcaggga	acagcaccac	ggcaacgcac	gcttacagcg	ttgatgccac	tgccgcctcc	4320
	gttaccaaca	acaccatcgc	cacggacgat	attcttaacg	ccgccgaagc	gggatcggcg	4380
	ctgaccaaca	gcggcaccag	cacggcgga	cggtgaccgt	acagcgtaac	cgtaccaacc	4440
45	ggcgttaatt	acagcggcaa	tgtgcaggca	gacgggagct	ggagcgtcag	cagcgacaaa	4500
	ggcgatttag	ctagccttac	cgccagctcg	tataccgtta	acgcctcggt	cagcgacaaa	4560
	gccagaaatt	cggtctcggc	aacgcataat	ctgacgggtg	accttgccgc	tccggtcgct	4620
	accatcaaca	cggtggcggg	cgatgacatc	attaacgcca	cggaacacgg	acaggcgcg	4680
	atcatcagcg	gctcggcaac	gggcgcgact	accggtaata	cggtttccgt	gacgattggc	4740
50	acgaccaact	ataccaccgt	gctggacggc	aacggcaact	ggagcatcgg	cgtagcctgc	4800
	agcgtgattt	ccgcgctggc	gcaggcgcat	gtgaccatta	ccgctacggg	caccgactcc	4860
	gcaggcaaca	gcggcacggc	ctcgcacact	gtcaccgtgg	cgctcggcgc	tccggtgctc	4920
	gccatttaaca	ccattgcccgt	cgatgacatc	atcaacggcg	cgagagaaag	cgcggtatct	4980
	gcgattaccc	gcaccagcaa	ccagcctgcg	ggcacgcaga	ttaccgttac	gctcaacggg	5040
55	caaaattaca	ccaccactgc	cgatgcttcc	ggtaactgga	gcgtgaccgt	tccggcgctc	5100
	cggttgagcg	ccctcggtga	agccacctac	acggtgaccg	cagccggcac	tgacgcccgt	5160
	ggcaacagcg	gttccgcccag	ccataacgta	cagggttaata	ccgcgctgcc	gggcgtcacc	5220
	attaacgtgg	tggcaacgga	cgatattatt	aacgcgcggc	aagcggggcg	ggaaacagacc	5280
	atcagcgggc	aggtgacggg	tgccggcgga	ggcgacacgg	tgaccgtcac	gctcggcggg	5340
60	gcgacttaca	ctggcacggg	gttaagctgga	gcgtcgatgt	tcgggcctcc	tcgggcctcc	5400
	gcgctacagg	agttggggcaa	cggcgaactg	accatttcgg	cttcgggtgac	gaacagcgta	5460
	ggcaataactg	gtaacggcac	gcgcgaaatc	accatagacg	cgaatctccc	cggtctgcgg	5520
	gtcgacaccc	tggcggggcga	tgatgtgggt	aatattatcg	agcacgggca	ggcgctgggt	5580
	attacgggca	gcagctccgg	tctggcgcg	ggcagcaacg	tcacgctgac	cattaacggg	5640
65	caaacctatg	ttgcggcggt	gctggcggt	ggcacctgga	gcgtcggcgt	tccggcggtg	5700
	gatgtcagcg	cctggcctgc	gggatcggtg	acgattgcgg	cgagcggtag	cacctctgcc	5760
	ggaaatccgg	taagcggttac	gcacccgggtg	acggctcgatc	tctcggcggt	ggcggtgagc	5820

	atcaacgccca	ttaccgccga	tgatgtgatc	aacgctgccg	aaaaaggcgc	ggcgttaacg	5880
	ctctccggca	gcacctctgg	cgttgaagcc	ggacaaacgg	ttaccggtcac	ctttggcggc	5940
	aaaacttaca	gcgccacggg	ggctgcgaat	gggtcctgga	gcacctcggg	tccggcgcca	6000
	gatattggcg	ctctgcgtga	tggcgaatgc	agcgcacagg	ccagcgctcag	caatgttaac	6060
5	ggcaacagcg	ccaccacgac	ccacgcttac	agcgttgatg	ccagcgcgcc	aacggtgacc	6120
	attaatacca	ttgcgggcga	tgatattctt	aacgcgcggc	aagccggagc	ggctctgacc	6180
	atcacccggca	gcagcacggc	ggaagcgggg	cagacggtga	ccgtcacgct	caatggcaca	6240
	aactacaccg	gcaccgtaca	gačggacggc	agctggagcg	tcagcggtacc	gtcagccgac	6300
	ttaagcacc	tgaccgccag	caactacacc	gtgaacggcg	cgggtgagcga	caaagccgga	6360
10	aacccggcct	cgggttaatca	caacctgacg	gtggatacgt	ccgttcgggt	cgtcaccatc	6420
	aacacgggtg	caggcgatga	tgtgatcaac	gcgacggaac	acgcccaggc	gcagatcatc	6480
	agcggctccg	ccactggagc	ggcaacgggt	agcaccgtga	cgggtgactat	cggcacaaat	6540
	acctttacca	cgggtgctgga	tgccagcgcc	aactggagcg	tcggcggttc	ggcaagcgctc	6600
	gtctcggcac	tggcgaatgg	cacggtgacc	atcaatgcc	gcgtcaccga	tggcggagga	6660
15	aacagcggca	gcgctaccca	tcaggtgacg	gtcaataccg	gggtgcccag	cattaccctt	6720
	aacgcaccca	cacgcgataa	catcctgaac	gccgatgaaa	aaggccagcc	gttgaccatc	6780
	agcggcggca	gtacggggct	ggcgacgggc	gcgcaggtca	ccgtcacgct	caacggtcac	6840
	aactacagcg	ccaccaccga	cgcacggggc	aactggacct	taaccgtgcc	ggtgagcgat	6900
	ctggcggcat	taggtcaggc	caactatacg	gtcagcgcca	gcgccaccag	tgcagcaggc	6960
20	aacaccccca	gcggccaggc	gaatttactg	gtcgacagcg	gcctgccgga	cgtcaccatc	7020
	aacacccgtg	caggcgacga	tattatcaac	gcgcgcgaag	cggggggccga	tcaaaccatc	7080
	agcgggggtg	tgactcgcgc	cgccgctggc	gatacgggtc	ccgtgacgct	gggcgggaac	7140
	acttacaccg	ctacgggtaca	gagcaactta	agctggagcg	tcagcggttc	gacagccgat	7200
	ctccagcgct	tgggcgaatg	tgatttgacc	attaccgcct	cggtcaccaa	cgtaaatggc	7260
25	aacacccggga	gcggcacgcg	ggatatcacc	attgatgcc	acctgccggg	gctgcgcgta	7320
	gataccgtgg	cgggcgatga	tatcgtcaac	agcatcgagc	acgggcaggc	gctggtgatc	7380
	accggcggca	gtagcggcct	gaatgcagg	gctgtgctga	cgggttaccat	caacagtgtg	7440
	gcgtattccg	ccacgggtga	ggcggaacga	agctggagcg	ttggcattcc	ggcggcaaac	7500
	gtcagcgctc	ggcctgcggg	gcccgttaac	gtggaggtag	acggggcaag	cagcgccaat	7560
30	aacccagtca	gcgtcagcca	tccgttcacc	gtcgatttaa	cggcggtggc	aatcagcatc	7620
	aacacccgtg	ccagcgacga	cgtgattaac	gccgcagaaa	aaggcaccaa	tctgactctt	7680
	tccggcagta	cagcggggat	tgagagcggg	caaaccgtca	ccgtcacttt	tggcggtaaa	7740
	acctacactg	caagcgctgc	cgccaaacgg	agctggagtg	taaacgttcc	ggcggcagat	7800
	ctggcaactc	tgccagaggg	cgccgcgaat	gtgcaggcca	gcgttagcag	cgcgagcggg	7860
35	aacagtgcct	cggcgaccca	tgcgtatagc	gttgacgcca	gcgcgcggac	gctcaccatt	7920
	aacaccatcg	ccacgcgacga	tatccttaac	gccgcgaag	ccggaagccc	gctcaccatc	7980
	agcggcacca	gcaccgccga	aacccggcag	acgggtgacc	tcacccttaa	cggcgcaaac	8040
	tacaccggca	ctgtgcaggc	ggacggtagc	tggagcgctc	gcgttcccac	ttcagccctg	8100
	ggcgcgctca	acgcaagcaa	ttacaccgtc	agcgccacgg	tcaatgacaa	agcgggcaac	8160
40	cccgccagcg	ccagccataa	tctggcggta	gacaccaccg	cgcgggttct	caccattaac	8220
	accgtggcgg	gcgatgacat	catcaacgat	gccgaacatg	cgcaggcgct	ggtgatctcc	8280
	ggcaccagta	gcgcggggga	agcgggcatg	gtggtgagcg	ttgtgctcaa	cggcaaaacc	8340
	tacaccacca	ccttggatgc	ctccggcaac	tggagcgctg	gcgttccggc	ggcagatggt	8400
	acggcgctgg	gtagcgggtg	gcagaccatc	accgcagcg	tcagcgatcg	ggcaggcaac	8460
45	agcgacgacg	ccagccgcac	cgtgaccgtc	agcctcagcg	cgccagtgat	tagcatcaac	8520
	accatcgcg	gcgatgatgt	gatcaacgcg	acggaaaaag	gatctgatct	ggcgctttct	8580
	ggcaccagcg	atcagcctgc	gggtacggcg	atcaccgtca	ccctgaacgg	acaaaactac	8640
	agcggcacc	cggtatgcctc	cggcaactgc	agtgttacgg	tgccctgcctc	ggcggtcagt	8700
	gcgctggggc	aagcgacctc	cagcgtgacg	gcgagcgctc	ccaatgctca	gggtaacagc	8760
50	agcaccggca	gccataacgt	gcagggtta	accgcgctgc	cgggcacac	cattaatccg	8820
	gtggcgacgg	acgatattat	caacgcttca	gaggcaggca	gcgcgcaaac	tatcagcggc	8880
	caggtaaccg	gtgcggcgcc	gggcagcacc	gtcaccgttg	aactgggcgg	taaaacttac	8940
	accgccaccg	tccaggctga	tttaagctgg	aatgtgagcg	tacctgccgc	cgactggcag	9000
	gctctgggta	acggtgagtt	aacggtta	gcctcggtga	ccaacgccgt	tggcaaacacc	9060
55	ggtagcggca	cgcgcgatat	caccatcgat	gccagctcgc	ctggcctgcg	ggtggatacc	9120
	gtcgcgggtg	atgatgtggt	caatatcatc	gaacacgctc	aggcgcagg	gatcaccggc	9180
	agcagctccg	gctttgccgc	aggcacggcg	ttgacgggtg	tgattaaaca	ccaaacttac	9240
	gccgcacagg	tgttggcgaa	cggtagctgg	agcgtcgccg	ttcctgcgac	ggatgtcagt	9300
	aactggcctg	cgggaacgct	gaatattacc	gttagcgggg	cgaacagtgc	cggaaacgaa	9360
60	accagcatta	cccacgcgt	gactgttgat	ctaccgccg	tcgccatcag	catgaacagc	9420
	atcacccagc	atgatgcgat	taacgcggcc	gaaaaaggcg	cggcggttaac	gctctccggc	9480
	agcacgtccg	gcgtcgaagc	ggggcaaac	gtcaccgtca	cctttggcgg	caaaacctac	9540
	accaccacgg	tggcgggcaaa	cggtagctgg	agcaccaccg	ttccggcggc	ggatttggcg	9600
	gcctgcgctg	atggcgatgc	cagcgcccg	gtgcggtgga	ctaacgtcaa	cggcaacagc	9660
65	gccacagcaa	cagcggaata	cagcgccgc	agcggcgcg	caacggtgac	catcaaacacc	9720
	attgccagcg	ataacatcat	caacgcggc	gaagcgccgg	cgggcggtaac	ggtgtccggc	9780
	accagcaccg	cgcgaacccg	gcagacgctc	accgtcacgc	ttaacggcac	taactaccag	9840

	accacgggtgc	agacagacgg	cagctggagt	ttaacgctgc	ccgccagcga	cttaaccgca	9900
	cttgctaata	acggctacac	cctgaccgcc	acggctcagc	atctggcggg	taaccttggc	9960
	agcggccagca	aaggcgtgac	cgctgatacc	actgcccggg	tgatcagttt	taacacogtg	10020
	gcgggcgatg	atgtgattaa	caacgtcgaa	cacattcagg	cgcagattat	cagcggcacc	10080
5	gccacggggcg	cgggtggcggg	cgaccgcctg	gtgggtgacca	tcgccgggca	gcagtatgtc	10140
	accagcaccg	atgccagcgg	caactggagc	gtcggcgctg	ctgccagcgt	gattttccggc	10200
	cttgccggatg	gcacgggtgac	catcagcgcc	accattaccg	atagcgcagg	caacagcagc	10260
	acgcagacgc	acaacgtaca	ggtagaacac	gcggcagtg	cgctctcggt	cagcactatc	10320
	agcggcgata	accttattaa	cgccgccgaa	gcgggcagtg	cgctgacct	gagcggcact	10380
10	ggcactaatt	tcgcgacagg	tacagtgggtg	accgtgtgtg	ttaacggcaa	aggctacagc	10440
	ggcaccattc	agagcaacgg	gagctggagc	gtgaacgtgc	ctgcggcgga	tggtgcggca	10500
	ctcagtgatg	gcaccagcta	cacggttagc	gctccgctc	aggacagtgc	cggaaacggc	10560
	aacagcagca	cgcagacgca	caacgtacag	gtgaacacgg	cggcagtgct	gctctcggtc	10620
	agcactatca	gcgggcgataa	ccttattaa	gcccgcgaag	cgggcagtg	gctgacctg	10680
15	agcggcactg	gcactaat	cgcgacaggt	acagtggtga	ccgtgtgtg	taacggcaaa	10740
	ggctgagctg	ccaccattca	gagcaacggg	gagggcgagc	tgaacgtgcc	tgccggcgat	10800
	gttgccggcac	tcagtgtatg	caccagctac	acggttagcg	cctccgctca	ggacagtgcc	10860
	ggaaacacgg	ccacggcctc	gcgcagcgtg	gcgggtggatc	tcaccgcggc	ggttatcagc	10920
	cttaaacacc	tttcgacgga	cgaccgcctc	aacgcgcgg	aacagcagca	gccgttaacc	10980
20	cttaaccggc	cgaccagcgc	ggaagtggg	aacggcgatc	ccgtcacctt	tgccggcaaa	11040
	acctataacc	ccacgggtgc	cgccaatggt	acctggggcg	tgaacgtgcc	tgccgtggat	11100
	ctggccgcgc	tcgggcaggg	cgccgagacc	attaccgcc	gcgtgaacga	tcgcgcgggt	11160
	aaccccgagc	aggccacgca	cgccctgacc	gtcgataccg	ttgcggcaac	ggtcaccatc	11220
	gccacggatg	cggttgacga	tattatcaac	aacggcgagc	agcttgccgg	gcagaccatt	11280
25	agcggcacca	ccaccgcgca	agtgggcccag	acgggtgaccg	ttacctttaa	cgggcaaaac	11340
	tggaagcgcaa	cgggttgccag	cgccgggaagc	tggtcggtgt	ttattccggc	gcagcagttt	11400
	gccggattaa	gcgacggcag	ctacaccatt	agcgcgacgg	ttagcgatca	ggccggaaac	11460
	cccggcgatg	ccagccgtgg	cgtgacgctg	aacggcgatc	tacctactgt	caccatcaac	11520
	acctttgctg	gcgacgatgt	ggtgaatgca	gcggaacacg	gctcatcgct	ggtgatcagc	11580
30	ggcaccacca	ccgcgcccgt	cgggcagacg	ctgaccctga	ccttaaacgg	caaaacctac	11640
	accaccacgg	tgacagcggg	cggtagctgg	agctacaccc	tcggcagcgc	cgatgtcacc	11700
	gcgctggcgg	acggcacaac	ctacgtgatt	aacgcctcgg	tgagcaatgc	cattggcaac	11760
	accggtagca	gtaatcacac	cattaccgtc	gatctcagcg	ctccggcgat	gggcattaat	11820
	atcgattccc	tgcaagcoga	cactggcctt	agcgcacgg	actttatcac	cagcgtcagt	11880
35	ccggtagtgg	tcaacggctc	gctcaccgcc	gcgcttgcca	gtaacgagac	ggcgcaata	11940
	agtatcgatg	gcagcacaac	ctggaccagc	ccttaccgta	ccggcacgac	ctggcgctat	12000
	aacgacagcc	gcacgctgac	cgatggcaac	tatctctatc	aggtgcgggt	gattgacgca	12060
	gcggggcaac	ttggcgcgac	cgacagccag	aatgtgtgta	tcgacactac	cgccgcagat	12120
	cccgcggatg	aaaccatcgc	catcagcgcg	atcaccaccg	atatgggctt	gatcactaac	12180
40	gattttgtgc	ccagcgacac	gacgcttgcc	gtgagcggca	cgcgtggggc	gacgctttct	12240
	gccgggtgag	tcgcgcgaat	cagcctcgac	ggcggcgctc	cctggactac	gttaaccgtc	12300
	gttgggacca	gctggagcta	tgccgatggt	cacacgctta	ctgacggcac	ctggaactac	12360
	acgggtgcgg	tggtggatct	ggcggggaa	gttggggcaga	ccgcaacgca	aaacgtgggt	12420
	tcgcagacca	agcggcgaaa	agtatcacca	ttaccggtat	ttaccggtat	cagcgatgac	12480
45	accggaacca	gcagcagcga	ttttattacc	agcgacacca	cgcttaccgt	gcgcggcgta	12540
	ttggggcgcg	cgctcgccgc	taatgagttc	gcgcaaatca	gtaccgacaa	cgccgcgaac	12600
	tggttgaaac	tgaccgtcgc	cgcagacagc	ctgaactgga	gttaccttga	cggacgaacc	12660
	ctcaccaacg	gcaccaacc	ctggcaggtg	cgggtggtcg	atctggcggg	caacgttggc	12720
	gcaacgagca	gccagtcggc	gctgatcgat	accgttaacc	cgccgcagg	gctcaccatc	12780
50	gccagcatca	gcaccgacac	ggggagttcg	gcaactgact	ttatcaccag	cgacaccatg	12840
	ctcacgctga	ccggttcgct	ggggggcggg	cctggccagc	gcgaagtggc	gcagattagc	12900
	cttgatagcg	gcgcgacctg	gacaacgctc	accaccaacg	gtacacagtg	gacttacacc	12960
	gacagccgca	cgctgaccga	cgccagctac	gtttatcagg	tgccgggtgct	ggatctggcg	13020
	gggaacaccc	gcccgggtgt	gtcgaaaacg	gtgggtggtc	atacgattaa	ccccaccgcc	13080
55	acaccaacga	ttgtgtcgta	taccgatgat	gtcgggcagc	ggcaggggac	attaagcagt	13140
	tcgcaggcca	ccagcgacac	tacggcggtg	ctgaacgggtg	tactttccgc	gccgcttggc	13200
	agcgggtgaag	tggtttacct	ctaccgtaac	gggctgctgt	tagggggcgg	gacgatgggtc	13260
	ggcgctctga	actggaccta	cagcgacagc	gggctgggtg	gcgggtgcta	tacctacagc	13320
	gcgcgagtg	tggttttggc	ggggaatatc	acctcctcca	gtgattttgt	cctgacgggtc	13380
60	gatacctcta	ttccgaccac	gctggcgcat	ataccagcgc	agaccacgcg	cgatactacg	13440
	ccgattatta	gcgggggtgat	caccgcgcgc	cctggccagtg	ggcagtatgt	tgaagtgggtg	13500
	atcaacggca	aaacctacac	ctctgaaccg	ggcggcgccg	tagtggtcga	tcggcgccac	13560
	aacacctggt	atgtacagtt	gcccgatacc	gatgcgctga	cagtttccgc	gaccgcctat	13620
	accggttactg	cgaggttaaa	aagttcggcg	ggtaacggca	ataacgccaa	tattagcaac	13680
65	ggcacgggtga	cgggttaacgc	ggcgattgat	tacacaccga	cctggactac	cgccagcaaa	13740
	accacgcgct	gggggctgac	ctacggcctc	gactcgcacg	ggatgtggac	ggtgctggca	13800
	aaccagcagg	taattgcaatc	gactgaccga	ctcacctggt	cgaagaccgc	gctgacgctg	13860

	tatcagagcg	gcaacaacta	cgccaccagc	tccattgccc	attacgaccg	taacggcacg	13920
	ggcgatctgt	ttatcacccg	tgatgactac	ggtacgggct	atattaacgg	ctttaccaat	13980
	aacggcgatg	gcacctt ttc	cagcgctatt	caggtcaccg	tcggcaccct	gacgtggtac	14040
	ggctcgattg	tggcatt tga	taaagagggc	gacggctatc	tcgactttcg	gattggtgac	14100
5	gctggcgggc	cggactc caa	caccttcctg	tggacaacac	caggcacgct	ggtaggcaac	14160
	tccaccacgt	cgaacagcgg	cggtagcgcc	acgggtggcg	gggcggtgac	ggggtatctt	14220
	tcgctcaacg	aaggttctgg	cgtcgatctg	aacaatgacg	gcaggatcga	cctgggttcag	14280
	cacacctata	acctgaacaa	ctattacacg	ctgtcttcgc	tcatacaacca	ggggaatggg	14340
	acgtttgtct	gggggcagaa	caccaccaat	accttcctga	gcgggcgggg	cagtggcgct	14400
10	atgagcagca	gcgtttccat	gacctggggc	gatttcgatg	gtgacggcga	tatggatctc	14460
	ttcctgcccc	ccagccaggg	aagagctaac	tacggctcgc	tggtattcaa	caccaacggc	14520
	gtactgggtt	gcccggtggc	ggtgggcgca	acgggaacca	cctacgccag	ccagtttagc	14580
	ctggcggtgg	actggaa cca	cgacggcctg	atggatatcg	cccgatatcg	ccagacgggg	14640
	cagtcgtatc	tttatactaa	cgtcagcaac	gccagcaact	ggacgcaatc	ggccctcggc	14700
15	ggcagccaga	gcgggtacac	cagcggcgctg	gocggcaatgg	actacgactg	ggacggcgcg	14760
	gtgatcggtc	tgggtgtcaa	acagtggggc	agcgtgttcc	tgagccgcaa	caccaacacg	14820
	gtgagctacg	gcacttcgct	acacctgccc	atcacgcatc	ccaacggcat	taacgtctat	14880
	tacggcaata	ccgtgaagct	gtacaactcg	gcgggagtg	tggtcgccac	gcaaatcatc	14940
	aaccgcagct	cggttatggg	ggttaacgac	acctcgccgc	tggtcaactt	ctacgggctg	15000
20	aatgcggag	aaacctacaa	cgcgggtggc	atcaaatcca	ccggcaccac	cgccagcaat	15060
	atcgaccaga	cggtcaacac	cagctggggc	ggtttacagg	ccaccgatgc	cactcacgct	15120
	tacgatctca	gcgctgaagc	gggtaccgcg	agcaacaacg	gcaagttcgt	cggcaccggc	15180
	tataacgaca	ccttcttcgc	caccgcagcg	accgacactt	acgacggttc	cggcggtctg	15240
	gtgtacagct	ccggcacccg	aacgtggcgt	gcgaacggcg	ggatggacgt	ggttgatttc	15300
25	cggctttcga	cggtgggcgt	gacgggtaac	tttaagcagca	ctgccgcgca	ggccaccggg	15360
	tttaacacct	cgacatttac	caatatcgaa	ggcattttccg	gctcgaattt	taacgacatt	15420
	ctgaccggca	gcagcggcga	taaccaactg	gaagggcgcg	gcggcaacga	cacgctcaac	15480
	atcggcaacg	cgggccacga	caccttgctc	tataaactgc	tcaacgccag	cgacgccact	15540
	ggcggcaacg	gctcagacgt	ggtgaatggc	tttacggtag	ggacatggga	aggcacggcc	15600
30	gacaccgatc	gcattgatata	tcgtgaactg	ttacagggca	gcggctacac	cggcaacggc	15660
	aaagccagct	acgtcaacgg	cgtggcaacg	ctggatgcgc	aggccggaaa	catcggtgac	15720
	tttgtcaaa	tcacccagag	cggcagcgag	acctcgtgc	agatcgaccg	cgacggcacg	15780
	ggcggcactt	ttgcgacaac	taacgtggtc	acgctgacgg	gcgtgcacac	cgacctcgcc	15840
35	acctgtctgg	cgaatcatca	ggtgatgggt	gtgtag			15876
	<212> Type : DNA						
	<211> Length : 15876						
	SequenceName : SEQ ID 660						
	SequenceDescription :						
40	Sequence						
	-----						
	<213> OrganismName : Escherichia coli O157:H7						
	<400> PreSequenceString :						
	ttgggtgttc	atacagccga	agccacactg	cctaacggca	acaacgatac	gaagatagtc	60
45	aatattgcgc	ccgatgccag	caacgcgcag	gttacgctga	acatccctgc	tcaacagggtg	120
	gtgacgaata	acagcgacag	cgtgcagctg	acggcgacgg	tgaaagatcc	gtcgaatcat	180
	ccgggtggcgg	gaataacggt	gaacttcacc	atgccacagg	acgtggcggc	aaactttacc	240
	ctcgaaaata	acgggtatgc	catcacccag	gccaatgggg	aagcgcatgt	cacgctcaaa	300
	ggtaaaaaag	cgggtatcgca	tacggttacc	gcaacgctga	gtaataacaa	taccagtgtat	360
50	tcacagccgg	taacgtttgt	ggcggacaaa	acctcggttc	tggttgttct	tcagatatca	420
	aaaaatgaga	tcacaggtaa	tggcgctgat	agcgcaacgc	taactgcaac	ggtcaaagat	480
	cagtttcgaca	atgaggtgaa	caatcttcgg	gtaacattca	gcacagcttc	ttcaggcctc	540
	acctgacccc	caggggaaag	taataccaat	gagtcgggca	tcggcgaggc	cactctcgca	600
	ggcgtttgct	ttggtgagca	gacggtcact	gcatcactgg	ctaataatgg	tgccagcgac	660
55	aacaaaactg	tgcattttat	tggcgacaca	gcggcgggca	aaattatcga	ggtgacgcct	720
	gtcccagaca	gcataatcgc	aggtaccccg	cagaacagct	ccggcagcgt	catcaccgcc	780
	acagtcgttg	ataataatgg	ctttccgggtg	aaagggtgta	ctgtgaactt	caccagcaac	840
	gcagcgacag	ccgaaatgac	gaatggcggt	caagccgtga	cgaacgaaca	gggtaaggct	900
	accgtcactt	ataccaatac	ccgctcctcg	atagaatcag	gagcgagacc	ggataccggt	960
60	gaggccagtc	tggaaaa tgg	tagctccacg	cttagcacat	caattaatgt	caacgctgat	1020
	gcgtctcagc	cacatctcac	ctgtgtacag	gcactttttg	atacagcttc	cgcaggcgac	1080
	actaccaatc	tgtatat tga	ggtgaaggat	aattacggca	acggagtacc	ccagcaggag	1140
	gtaaccctca	gcgtttcacc	aagtgaagg	gtgaccccca	gtaataacgc	tatatatacg	1200
	accaatcacg	acggcaattt	ttacgcaagg	tttaccgcta	caaaagccgg	ggtataccaa	1260
65	gtgacggcaa	ccctcgaaaa	tggcgattcg	atgcaacaaa	cagtgacctc	tgtgccgaac	1320
	gtagcgaatg	ctgaaatctc	gctggcagcc	tcgaaggatc	cggttaattgc	caacaataac	1380
	gatctcacga	cactaacacg	aacagtcgct	gatacagagg	gcaatgcgat	agccaacagt	1440



```

gaggtaacat ttactctgcc ggaagatgtg agggcggaact tcacgctggg cgatggcggt 1500
aaagtgggta ctgatactga aggcaaagcg aaagtcacgc tgaaagggtac aaaagcaggc 1560
gctcatactg ttacagcatc gatggctggc ggtaagagtg agcagttggg ggtgaacttt 1620
attgcgggata cactcactgc gcagggttaat cttaacgtta ccgaggacaa ttttatcgct 1680
5 aataacgtcg ggatgaccag gctgcaggca acagtgactg atggaaacgg caaccggtta 1740
gccaatgagg cgggtgacatt cacgctaccg gcagatgtga gcgcaagctt tactctcgga 1800
caaggcggtt ccgccattac tgacatcaac ggcaaggctg aagttacact gagcggtaca 1860
aaatccggca cctaccocgt gacagtttagc gtgaaacaatt atggtgtcag tgatacgaaa 1920
cagggtgactt tgattgccga tgcctggtagc gcaaaactag cctccttaac ctctgtatac 1980
10 tcattcgtcg tcagcacgac cgaggcgcgcg accatgactg caagcgtcac tgacgctaac 2040
ggcaaccggg tagaagggtat aaaagttaat ttccgcggaa cttccgtcac gctaagcagc 2100
accagcggtg aaacggatga tcgggggtttc gctgaaattc ttgtgacaag caccgaggtc 2160
ggactgaaaa cagtttcagc ctctctggca gataaaccta ctgaagtcac ctccgcat 2220
ctgaatgcaa aagcagatat taattctgca acgattacca gtctggagat acctgaaggt 2280
15 cagggtcatgg tcgcacaaga cgtagcagtt aaagctcacg tcaacgacca gtttggcaat 2340
ccgattctta aacattctgt aacattccagt cagaaccacg cagagccatg gaccatcagc 2400
caaaatattg tctctactga tacgcattggt atagccgagg tcactatgac gcccgaaga 2460
aacggttcgt atatgggtgaa agcatccctg gcgaatggat cctcttatga gaaggatctg 2520
gtggtaaatcg atcaaaaact gacactctcg ggcctccagc cgcttatcgg tgtcaattcc 2580
20 ccaacagggt ccaactctgac ggcaacgtga actctgcaa atggcactcc agtggagggt 2640
cagggtcatca actttagcgt aacgccagaa ggtgcgacgt taagtggcgg aaaagtgaga 2700
accaactcct caggtcaggc tccagtcggt ctgaccagca ataaagtcgg tacatatcag 2760
gtgactgcac cgttcataa cgccgtaaca atacagacac agacaatcgt gaaagtcact 2820
ggcaactcaa gcaccgccca tgttgctagc tttatcgctg atccatcgac tatagccg 2880
25 accaacagtg atttaagtac cttaaaggca acggttgagg atggcagtg taacctgatc 2940
gaaggtctca ctgtgtactt cgcccttaaaa agcggctctg ccacattaac gtcattaaca 3000
gcggtgacag atcaaaacgg aatcgcgaca acaagcgtga gaggagcgat aacggggagc 3060
gtcaacggtaa gcgcagtcac gaccgctggt ggaatgcaaa cagtagatat aacgctggtg 3120
gcaggcccg gacagccctc gcagtcgctc cttagaaca atcggtcatc attgaaagga 3180
30 gactttaccg atagtgtgta gctacatcct gttctgcacg atatatcagg caatccgatc 3240
aaagtttctg aagggtctgga atttgtgcag tcaggtagca acgccccta tgtgcaagtt 3300
agtgaattg acatacgtaa aaatttctca ggcgagtaca aagccactgt tacaggcg 3360
ggagagggtg tcgcaacgct gatecctgta ttgaatgggt ttcacaaagc ggggtctgag 3420
accacaatac aattcactcg cgcagaagac aaaataatga gcggtacagt gttagtcaat 3480
35 ggtgctaacc taccgacaac tacattccct tcgcaggggt tccctggggc gtattatcag 3540
ttgaataatg acaactttgc ccaggaaaa acggcgctg attatgagtt tcaagctct 3600
gcctcctggg ttgatgttga tgctaccggt aaagtgcac ttaaaaatgt cggcagcaaa 3660
tgggagagga ttacggcgac gccaaaaaca ggccggcccta gctatatata cgaatccga 3720
gtgaagagtt ggtgggtgaa cgccggcgat gctttcatga tatacagcct tgcgtaaaat 3780
40 tttgcaagta gcaatggcta cacatttccc gctgagacc atttaaaaca tagtcggtcc 3840
cgaggcatcg ggtcactgta cagtgaatgg ggagatatgg ggcattacac gactgaagct 3900
ggttttcatt caaatatgta ttggtcatcg agtcccga actcaaacga acaatacgta 3960
gtttccctgg caacaggtga tcaaagcgta tttgaaaagc ttgggtttgc ttatgcgaca 4020
45 tgttataaaa acctctga 4038
<212> Type : DNA
<211> Length : 4038
SequenceName : SEQ ID 661
SequenceDescription :

50 Sequence
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
55 atgagcctga ttattgatgt tatttcgcgt aaaacatccg tcaaaacaaac gctgattaat 60
cctggcgacg tcacgggtgt tatttatgag ccttccgtgg tgcaggttca tgcctcaggcc 120
tctgccgttg cgcgttacgt ccgtgaagga aatgacctgc tgatctatat gcaggacggc 180
acggtgatcc gctgcaacgg ttatttcctg caagcggcga atacagctga acaatcggaa 240
ctggtggttg ccgatggtca acagctaacc catatcacct ttgccgatac tgctgcgggt 300
ggattagccc ccgtagaact gactgcccag accactgcga ttgaaagcat tgcgccattt 360
60 ctgataccg ttgctcagac cagcgccttc ccgtggggtt ggctggcggg ggcggcggtg 420
ggtgggtggc cgcttggtgc actgtgggca agcgggtggc atggcgactc gaaaacagaa 480
gtgattaata acctacgcc acctgctgag cctggcaacg ccacaccatc atttttagtt 540
accgataatc agggcgatca gcgcggcatt ctaggcacca atgacatcac cgatgacacc 600
acgccaacct ttagcggcag cgggcaggc gggcgacta ttcagattaa agacagtaac 660
65 ggcaatacta ttgccagtac tcaggtgagc aacacggtc actggagtg ctctgtaccc 720
acgcaaagtg cagggtgaaca tacctggtca gtggtgcaaa ttgtcggcag taccatcact 780
gacgcgggtt cgataacggt aaccatcgac aatagtcagg ccagcgtgca ggttgccacc 840

```

```

accgcaggcg ataacattat taacgccagc gaacaggccg ccgggtttac gctttctggc 900
accagtagcc atctggcgca gggaaacagaa ctcaccgtta cgctaaacgg caaaacctac 960
acgaccagcg taggcgctaa cggcgccctgg agcgtgcagg tgccgaccgc cgatgcacag 1020
gcggttagcg aagggaatca ggcggtgctg gtcagtgagg aagacgccac aggcaataac 1080
gtcacccggc cgcagctact aacggctgat acccaaccgc caacgcttgc catcaaccac 1140
5 atcgctcagg acaacattat cagtgcctgc gaacataacg tcgcgctggg actgagcggc 1200
acgtcgaatg cagaagcggg gcaaaccgta acactgaccg tcaacgggaa aagccataca 1260
gcaaccgtcg gtagcgacgg aacctggcaa gtgacgctgc ctgccacgga agtccaggca 1320
ctggcggagg gtaattacgc tgtcaatgcc agtgtcagcg atcgggcagg gaacaccacc 1380
10 agccacagcg cgaatttcac ggtagacacc tcagcaccog tggtcagtggt taataccgtg 1440
gcccgcgacg atattcttaa taatgccgag caggccgtcg cgcatcatct cccggacaa 1500
gtcagcgggt cttctccagg cgatacggta accgtgaaat tgggcactca tgtcctgacg 1560
ggcgcggagg tggcagatgg cagctggaaat gtggcgtgg acccagcggg aaccgcgacg 1620
ctggatcgcg gagccaatac gattttcgtc accgtgacag atgtgcagg aaatactggc 1680
15 gcccgcgtct gagcaatcac gctggctcgg gtttctccgt tgatcaccat taacaccgtc 1740
tccggcgatg acattatcag tggcgcagaa aaaggtgcgc cactgaccct taccggtgac 1800
actcaacagg ctgagacagg acaaaccgtc accgtaaccc tggctggaca gagttttacc 1860
actaccgtgc aggcgatgg ctctggagt ctgacggtac ctgccgccgc gatgggaaat 1920
ctgctcgacg ggcgggtggc gattaccgtc tctgtgacgg atctcagcgg caataccggc 1980
20 aacacttccc gcaccattac cgtcgatagc caggccccgg ccttaagcat tgatccactg 2040
accctcgata acatcattaa cgcgcggcaa agcgggcagg atctgcccac caccggcacc 2100
accgacgctc agccggggca gacggtgacc gttacgttaa atgggcagac gtatcagggc 2160
gtcgtgcagc cagacggcac ctggagcgtg actgtgcccg ccgccaacgt gggcgcactg 2220
gctgacggca acgctacggg caccggcagc gtgaacgatg tcgcgggtaa tccgagcagc 2280
25 gtttcacgcg tggcgtgggt ggtgccacc cgcggcggtg taaccattaa tccgggtggc 2340
accgataacg tcatcaacac gccggaacat gctcaggcgc aaatcatcag cggcacgggt 2400
actggcgctc aggcggggca tatcgtcacc gtgacgctga ataattgtgga ttacaccacg 2460
gtgggtgatg gttccggcaa ctggagtctg ggcgttccgg cctcgggtgg cagtgggtcg 2520
gcgacggca cgtatcctgt cagcgtctcg aagccggaaa acgcccggaa caggggcagc 2580
30 cagtcattga ccgtcacggg caataccgcc gcgccctta tcggcattaa cagcatttgc 2640
ggcgatgatg tgattaacgc cagcgaaaaa ggggcccgtc tccagattac cggcaccagc 2700
gatcagcctg ttaacaccgc catcaccgtg acgtgaaacg ggcaaaatta caccaccacg 2760
accgacgctt ctcgcaactg gagcgtcacc tctccggcat cggcgggtac agcattaggc 2820
caggccaact atacggtaac ggcggcggtg accagcgata tcggcaacag cgccactgcc 2880
35 agccataacg tgcgtggtcg cagcgcgctg cccggtgtga ccattaatcc ggtggcaacc 2940
gacgatatta ttaacgccgc cgaagcgggc gtggcgcaaa ccatcagcgg gcaggtgact 3000
ggcgcggaag atgctgcacac ggtaactatt agcttgggtg gtaatactta tacggcgacg 3060
gtgggcagca atctcacctg gagcgtggac gttccagcgg cagatattca ggcgctggga 3120
aatggcgatt taacgggtta tgctcagtc accaatcaaa acggcaacac cggcagcggc 3180
40 acgcccggata tcaccatcga ccccaatctg cccggcctgc gggtcgatac ggtggcgggc 3240
gatgatgtgg tcaatatcat cgagcagcgg caggcgctgg tggtcaccgg cagcagctcg 3300
gggctggctg aaagcacgcc gcttaccgtt acgattaata atgtggaata caccactgcg 3360
gtgcaggccg atggtagctg gagcgtgggc gtcacggcgg cgcaggttag cgcctggcct 3420
gcccggacgg ttaatatgtc cgttccaggg gaaagtagcg ccgaaactc ggtgagcatt 3480
45 acgcatccgg tgacgggtga tctactccg gcacgatca ccatcaacac catcgccacg 3540
gacgatgtga ttaacgccgc agaaaagggc gctgatttaa cccttccgg caccaccact 3600
aacgtagaac ccggtcaaac cgtcaccgtc accttggcgg ggaataatta cactgccagc 3660
gtagcgagcg atggtagctg gactgccacc gtaccgcgg ccgatctggc gtcattaccc 3720
gagggcagcg cctccgcact ggccagcgtc agcaatatca acggcaatag cgcctcggcg 3780
50 gtgcacaact acagcgtcga cagcagcgcg ccaaccatca ttatcaatac cgtcgccagc 3840
gacaatatcg tcaacgccag cgaagccgat gcgggcgtga cggtagcggc cagtaccacc 3900
gccgaagcgg ggcagattgt tacgataacg cttacagacc cgtaccagcc gagcattacg 3960
gcaacgggtg aggcggacgg cagctggagc atcaatatc cggcggcaga tcttgaggca 4020
ttgaccgatg gcagccacac cctgaccgcc acgggtcaatg acaaagcggg caatccggcg 4080
55 agcaccacgc ataatotggc ggtggatctc accgttccgg tgctgaccat caacaccatt 4140
gcccggcgat acattattaa cgccaccgaa caggggcagg cgtggtgat ttccggttc 4200
agcaccggcg gagaagcggg ggatgtcgtc accgtcacgc taaacagtaa aacctacacc 4260
accaccctgg acgcctccgg caactggagc gtcggcggtc cggcggcgga tgtcacggcg 4320
cttggcagcg gcccgcaaac tgtcaccgcc acggttaccg atgcggcagg caacagcgac 4380
60 aattag

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 4386

SequenceName : SEQ ID 662

SequenceDescription :

65

Sequence

-----

```

<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
5  atgaatagaa tctatcgcgat gatatggaat tgcactctac aggtatttca ggctgtgctcg 60
   gaattaaactc gcagggtagg taaaacatca acgggttaatt tgcgaaagtc ctctggactcg 120
   acaacgaaat tcagtagatt gacgctgggt gttttgtctgg cactaaagcgg ttccagtgtct 180
   ggtgcgagtc tggaaagtga taatgggtcag attaccaata ttgatactga tgttgcttat 240
   gatgcctacc tgggtggctg gtatggcact ggagtgctta atattttggc tggcggtaat 300
   gcctccttaa ccactattac taccagcgctc attggcggta atgaggattc ggaggggtacc 360
   gttaatgttt tgggtggcac ctggcgattg tatgatacg gaaataatgc aaggccttta 420
10  aatgtgggtc aatccggaac ggggacgctg aatattaaac agaagggtca cgtcgatgga 480
   ggctatttaa gattaggtac tcaagctgca ggcgctcgga cgggttaattg tgaggagagag 540
   gactcggttt tgacgaccga attattcgaa atagggagtt acgggtacggg ctcatataat 600
   attacggata aggggttacgt cagcagttca atagtcgcca ttttaggata tcaagcgaac 660
   agtaatggta aggttgctgt .tgaaaagggt ggcgagtggtc taataaaaaa taatgattcc 720
15  tcaattgaat tcaaaattgg taatcaagga actggggagg cgactattcg cgagggtggg 780
   ctgattacgg aggaaatac gattatcggt ggcaatgcc cgggtgtcgg aaccctgaat 840
   gtgcaggatc aagactctgt catcacggta cgcagactct ataattggata tttcggtaat 900
   ggcgagtcga atatttccaa taatggacta attaataaca aagaatattc attggtgggc 960
   gttcaggacg gttccacagg tgtcgtcaac gtgaccgata aagggcattg gaatttcttc 1020
20  ggaacgggag aagcttttccg ctatatctat atcgggtgat ctggcgacgg tgaacttaat 1080
   gtctcgcggt aaggtaaagt agattcggga attactactg cggggatgaa agaaacaggc 1140
   acaggcaacc ttaactgttaa ggataagaac tccggttatca ctaatctcgg aactaatctt 1200
   ggttatgacg gccacggcga aatgaatatc agtaatgagg ggcttgttgt cagcaacgga 1260
   ggaactctct tcggttatgg agaaacggcg gtcgggaagg ttagcatcac cacggggggg 1320
25  atatgggagg tcaataagaa tgtctatacc accattgggtg ttgctggcgt cgaaacctc 1380
   aatattagcg atggcggtaa gttcgtatcg caaaatatta cttttttggg cgataaagca 1440
   agcggtatcg gcacactgaa cctgatggat gcgacatcgt cgttcgatac tgtgggtatc 1500
   aatgtcggta attttggtag cggtatcgta aatgtcagta atggtgccac ccttaattca 1560
   acgggctatg gatttatcgg aggaaatgcc tccgtaagg gaatagttaa tatttcaacg 1620
30  gatagtctct ggaattttaa gacgtcttct actaacgccc aattgctaca ggtcgggtga 1680
   ttaggcacgg gtgaactgaa tattaccacc ggaggtatag ttaaagcgg tgatacacag 1740
   atagctctca atgacaaaag taaggcgagc gtgagggtgg atgggcagaa ctctcttctt 1800
   gaaacattca atatgtacgt agggacatct ggtacgggta cgttaaccct gacgaatagc 1860
   ggcacgctga atgtcgaagg tggagaagtt tacttaggtg tttttgaacc tgctgtagga 1920
35  acgctaaaca ttggtgcagc tcacgggtgag gcggcgagcag atgccggatt tatcaccaac 1980
   gcgacgaaag tagattttgg ctctggcgaa ggtgtttttg tctttaatca tactaataac 2040
   agtgatgccg gctaccaggt cgatatgctg cgatatgctg acgataaaga cggaaaagt 2100
   atccatgatg caggccatac ggtgttcaat gcagggaata cttatagcgg taaaacgctg 2160
   gtcaatgacg gcctcctgac cattgcgtct catacggcag atggggtaac gggcatgggg 2220
40  tcgagtgaag taaccattgc aagccccggt acgctcgaca ttctcgcatc aacgaacagt 2280
   gcaggagatt acacgctgac caatgcgctc aaaggcgatg gcttgatgag agttcagctg 2340
   tcatctctcg acaagatgtt tggctttaca catgcaacag ggactgaatt cgccggtggt 2400
   gcccaactga aagacgtac ctctactctg gaacgcgaca acacgctgc gcttactcac 2460
   gcgatgttgc agtctgacat tgaaaatacc acatcggtaa acgtgggaga gcaatccatt 2520
45  ggtggactgg ccatgaatgg cggtagcgtc attttcgata cggatattcc tgctgcgacg 2580
   cttgcagagg gatatacag cgtcgatacg ctggttgtcg gcgcgagtga ctacacctgg 2640
   aaaggccgta actatcaggt aaacgggacg ggcgacgtgc ttatcggcgt gcctaaaccg 2700
   tggaaatgat ctatggcgaa taaccctctg acgacgctca atttgctgga acacgatgat 2760
   aacctgtcgc gcgttcaact ggtgaaggcg caaacgggta ttgggtcggg tggctcatta 2820
50  acgttacgtg atttacagg cgacgaggtg gaagcggaca aaacgttaca cattgcgcaa 2880
   aacggaacgg tggtcgccga ggggtgattat ggattccgcc tcacgaccgc accaggtgat 2940
   ggtttgtacg ttaactatgg gctgaaagcg ctgaacatcc atggaggga aaagctgacg 3000
   ttagccgaac atggcggagc ctatggcgca acggcgata tgtcggcaaa aatcgggtgg 3060
   gaaggggatc tggcaatcaa tacgggtcga caggtttcgc tttccaacgg tcagaacgac 3120
55  tatcaggggg caacctacgt tcagatgggg acattacgta ccgatgcgga tggcgcgctg 3180
   ggcaacacc gggaactgaa catcagcaac gcagccatcg tcgatcttaa tggatcgacg 3240
   cagacggtag agacattcac cgggcagatg ggttcgactg ttttgttcaa agaagggtcg 3300
   ctgacggtaa ataaaggtg gatcagtcag ggtgaactga cagggtggcg aaacctgaat 3360
   gttacagggg gaacgctggc tgtcaggggg cttaatgcac gctacaatgc gtttaaccagc 3420
60  gttagcccaa atgcggaagt cagcctcgat aatacgcagg ggttaggcag aggaaatatt 3480
   gccaatgacg gctctgttaa gctaaaaaac gtgactggcg aactgcgtaa tagcataagc 3540
   gggaaaggga tcgtgagcgc aaccgccagg acagatgtag agctggatgg cgataatagc 3600
   cgctttgtgg ggcaattcaa cattgataca ggcagcgcgc tcagcgtcaa cgacgagaa 3660
   aacctgggtg atgcttccgt tatcaataat ggctgtctca ccactctccac tgagcgtagc 3720
65  tggcgatga gcacagtat cagcggtagg ggtgatttga ccaactggg tacggggatc 3780
   ctgactctta acaacgatc ctccggcgtat cagggtacga cggatattcg ggggggggaa 3840
   attgcttttc gttccgactc tgccattaat acggcaagtc aacacattaa tatccataac 3900

```

```

agcgggtgtga tgtcgggaaa tgtcaccact gcagggtgatg tgaacgttat gtctggggggg 3960
acactgcgtg tcgctaaaaac cacaatcggc gaatcggcgg caacctggag aatggcggca 4020
cggttcaaat ga 4032

```

5 <212> Type : DNA  
 <211> Length : 4032  
 SequenceName : SEQ ID 663  
 SequenceDescription :

## Sequence

```

10 -----
    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
    atgggcatca aacaacacaa tgggaataacc aaagccgatc gtctcgctga attaaaaatc 60
    cgttcgccct caattcaact gataaaattt ggcgctattg gtttgaatgc aattctcttt 120
15 tccccctgc tgatagctgc tgatacagga agtcaatatg gcaccaatat tactattaat 180
    gatggtgaca gaattactgg agataccgcc gatccatcag gaaacctcta tgggtgtaatg 240
    accccagcag gaaacacgcc tggcaatatc aacctgggta atgatgtcac cgtcaatgtc 300
    aacgacgct ctggatatgc aaaaggaatc attattcagg gcaaaaacag ctccctgaca 360
    gctaaccgac tcacagtaga tgttggttgg caaacctctg ccatcggcac taattttaatt 420
20 ggtgactata cccatgctga cttaggcaca ggcagcacca ttaagagtaa cgatgacggc 480
    atcattattg ggcatactgc aacactaaca gccactcaat tcaccattga aaactcgaac 540
    ggtataggcc taaccatcaa tgactatggc accagtgtcg atcttggag cggaagtaaa 600
    atcaagaccg atggaagtac aggtgtttat atcggtgggc tcaacggcaa taacgccaat 660
    ggtgctgcgc gttttacggc gacagacctg acaatcgatg ttcagggcta cagcgccatg 720
25 ggggataaacg tacagaaaaa ctctgttgtc gatctcggaa caaacagttc cattaaaaacc 780
    agtggcgata atgcacacgg cctctggagc tttggccagg ttagcgcgaa tgcaactcact 840
    gttgatgtaa ctggagccgc ggccaatggc gtcgaagtgc gtggtggtac aaccactatc 900
    ggtgcagata gccatatttc ttccgcgcag ggcggtgggc tcgtcaccag tggttcagac 960
    gcgacaatca atttttctgg caccggcagc attgatgaa gtacaccga ccagatggcc 1020
30 tatggtgcct cggcccagac ggcaacggct gttatcaaca tgcaaaatac cgatattacg 1080
    gttgatcgta atggcagctc ggcgctgggt ttgtgggcgc tcagcggcgg tagaataacc 1140
    ggagacagtt tggctatcac cggcgccgga ggagccaggg ggatttatgc catgaccaac 1200
    agccagatcg acctcacgag cgatctggtc attgatgaa gtacaccga ccagatggcc 1260
    atcgcaacgc aacatgacga tggttatgcc gccagccgca tcaacgcctc gggtcgtatg 1320
35 cttatcaacg gtacgcttct ttccaaaggt gggctaatac atctggatat gcaccctggg 1380
    tcggtttgga caggttcttc cctcagcgat aatgtcaatg gcgggaaact ggacgttgca 1440
    atgaataaca cgtcttgga cgttaacaat aattctaata tcgacacgct ggcgctgagc 1500
    cattcaactg tcgattttgc cagccacggg tcaactgccg gcacatttac cacattaaac 1560
    gtagagaacc tgagcggtaa cagtaccttt attatgcgtg ctgatgttgt tggcgagggg 1620
40 aatggcggtta agccctgggc ctga 1644
    <212> Type : DNA
    <211> Length : 1644
    SequenceName : SEQ ID 664
    SequenceDescription :

```

## Sequence

```

45 -----
    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
    gtggggatcg acagccgtaa tgatattcct gaggggattg cgacgctggg cgcttttatg 60
    ggttattccc attcacatat cggttttgat cgtggaggac atggcagtggt ggacagttat 120
    tctctgggag gctatgccag ttgggaacct gaaagtgggt tctatctgga cgggtgtcgtg 180
    aagctgaacc gttttgaaag taacgtagcc ggtaaaatga gcagcggtgg agccgccaat 240
    ggcagttacc atagcaacgg gctgggagggt cacattgaaa ccgggatgcg atttaccgat 300
55 ggtaactgga acctgacgcc gtatgcctcg ttaacgggggt tcaccgctga taaccccgaa 360
    tatcatttat ccaatggcat ggaatcgaaa tcagtcgata cccgcagtat atatcgtgaa 420
    ctgggtgcaa cgctgagtta caacatgcgt ctggggaaac gtatggaagt tgagccgtgg 480
    ctgaaggcgg ctgtgcgcaa agaatttgtc gatgataacc gggtgaaagt gaatagtgac 540
    ggtaatttcg tcaatgattt gtcgggcaga cgtggaatat accaggcagg tattaagacc 600
60 tcattcagca gtacgttaag cgggcacctt ggggtgggggt atagcaacgg tgctgggtatg 660
    gaatccccgt ggaacgcggg ggctggtgtg aactggctgt tctga 705
    <212> Type : DNA
    <211> Length : 705
    SequenceName : SEQ ID 665
    SequenceDescription :

```

## Sequence

```
-----
<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
5 atgaaaaaaa aggttctggc aatagctctg gtaacggtgt ttaccggcat ggggtgtggcg 60
  caggctgctg acgtaacagc tcaggctgta gcgacctggg cagcaacagc caaaaaagac 120
  accaccagta agctggttgt gacgccactc ggtagcctgg cgttocagta tgccgaaggc 180
  attaaaggtt ttaactcaca gaaaggtcta tttgacgtgg ctatcgaggg tgactcaacg 240
  gctaccgcct ttaaactgac ctcacgtctt atcaccaaca cattaacca gttggatacc 300
  tcaggttcca cactgaatgt gggcgtggat tataacggcg cggcagtcga aaaaactggc 360
10 gataccgtga tgatcgatac cgccaacggc gtactgggcg gcaaccttag cccgctggca 420
  aacggttaca atgccagcaa tcgtaccacc gcacaggatg gtttcacttt ctccatcatc 480
  agcggcacca ccaatggtag caccgcagta accgattaca gcactctacc ggaaggcatc 540
  tggagcggcg acgttagcgt acagttcgac gcgacctgga ccagttaa 588
<212> Type : DNA
15 <211> Length : 588
    SequenceName : SEQ ID 666
    SequenceDescription :

Sequence
-----
20 <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
  atgacggcag aatcctacga tgataactac ctggatgatg aagacgcgga ctggaccgcg 60
  accgggcagg ggcagaaatc tgcaggatgat accagtttta cgctggcctg gaaaccggga 120
25 gaggaaggcc agaaagggtt tataggctgg tttgaaagcg gcgatgtccg ggccataaaa 180
  atccgttttc cgaatggcac ggtggatgtg tttcgtggct gggtcagcag tatcggtaag 240
  gccgtgacgg cgaaagaagt gatcacccgc acggtgaaag tcactaacgt gggtaaacct 300
  tctgtagcgg aagaacgcag caaaattacg ccggtcagtg cgattaaggt gacgccgaca 360
  tccggtacgg tggcaaaaagg gaaaacaacc accctgacgg tttcttttga gccggaaaagt 420
30 gcaacagaca agacgttcag agcggtttcc gccgatccgt cgaaagccac cattagtgtg 480
  aaagatatga caattacggt aaacggcgtg gcgacaggta aggtgcagat ccctgtggtg 540
  agcggaaaatg gtcagttcgc cgcagtggct gaagtcaacc ttactgaagc gggcgctgca 600
  gggtaa 606
<212> Type : DNA
35 <211> Length : 606
    SequenceName : SEQ ID 667
    SequenceDescription :

Sequence
-----
40 <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
  atgacggcag aatcctacga tgataactac ctggatgatg aagacgcgga ctggaccgcg 60
  accgggcagg ggcagaaatc tgcaggatgat accagtttta cgctggcctg gaaaccggga 120
45 gaggaaggcc agaaagggtt tataggctgg tttgaaagcg gcgatgtccg ggccataaaa 180
  atccgttttc cgaatggcac ggtggatgtg tttcgtggct gggtcagcag tatcggtaag 240
  gccgtgacgg cgaaagaagt gatcacccgc acggtgaaag tcactaacgt gggtaaacct 300
  tctgtagcgg aagaacgcag caaaattacg ccggtcagtg cgattaaggt gacgccgaca 360
  tccggtacgg tggcaaaaagg gaaaacaacc accctgacgg tttcttttga gccggaaaagt 420
50 gcaacagaca agacgttcag agcggtttcc gccgatccgt cgaaagccac cattagtgtg 480
  aaagatatga caattacggt aaacggcgtg gcgacaggta aggtgcagat ccctgtggtg 540
  agcggaaaatg gtcagttcgc cgcagtggct gaagtcaacc ttactgaagc gggcgctgca 600
  gggtaa 606
<212> Type : DNA
55 <211> Length : 606
    SequenceName : SEQ ID 668
    SequenceDescription :

Sequence
-----
60 <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
  atgttatata atataccttg tcgaatztat atcctttcca ctctgtcatt atgcatttct 60
  gggatagttt ctactgcaac cgcaacttct tcagaaacaa aaatcagcaa cgaagagacg 120
65 ctcgctcgta ccacgaatcg ttcggcaagc aacctttggg aaagcccggc gactatacag 180
  gttattgacc acaaacatt gcagaactcc accaatgcct ccatagccga taatttgag 240
  gacatccccg gagtagagat aacagacaac tccttggcag gccgtaaaca aatccgcatt 300
```

cgtggcggaag catcctcccc tgttttaatt ctcattgatg gtcaggagggt aacttatcag 360  
cgcgccggag ataattatgg tgtgggactg ttgatagatg agtctgcgct ggagcgtggt 420  
gaggtagtga aaggtccata ttccgtactg tacgggttcac aggcaattgg cggtattggt 480  
aacttcacaa ccaaaaaggg aggtgacaaa cttgcatctg gagttgtgaa agctgtttat 540  
5 aattccgcaa cagcaggctg ggaagaatca atcgcgggtcc aggggagcat cggtggattt 600  
gattatcgca tcaacggtag ttattctgat cagggcaatc gtgatacgcc ggatggacgt 660  
ctgccgaata ccaactatcg taacaatagt cagggtgtat ggttgggtta taactccgga 720  
aaccatcggt ttggcctctc gcttgatcgc tacagactcg cgacacaaac ttactatgag 780  
gatccagacg gaagttatga ggcatcttag gtcaaaatac ctaaaactga acgagagaaa 840  
10 gttgggggat tctatgacac agacgtggac ggtgactatc taaaaaaaat tcatttcgac 900  
gcgtatgagc agaccatcca gcgccaattt gccaacgaag taaaaacgac acagcctggt 960  
cccagtcgga tgattcaggc totgaccgtt cataacaaga ctgacaccca tgataagcaa 1020  
tacactcagg cggtcacatt gcagagtcac ttttcgctgc ctgctaataa tgaacttggt 1080  
accggtgcac agtacaacaa agataggggt agccaaaggt ccggtggcat gacctcaagc 1140  
15 aaatctctga ccggcttcat taataaggaa acacgaactc gctcctatta tgagtcagag 1200  
caaattacag tctcactatt cgcacaaaat gactggcaat tcgccgatca ctggacatgg 1260  
acaatgggag ttccccaata ctggctttct tcaaaagttga cgcgtgggtga cggagtatca 1320  
tataccgcag gcattataag cgatacctct cttgccagag agtctgcgag tgatcacgaa 1380  
atggtaacat ctacaagcct gcgctattca ggtttcgata acctggaggt acgcgctgcg 1440  
20 ttccgcgaag gctacgtatt tcccacactc tcccagcttt ttatgcagac atctgcgggc 1500  
ggcagtgatca catacggaaa tctgatctt aaggctgaac actccaataa ctttgaatta 1560  
ggtgcacgat ataattgtaa tcagtggctg attgacagcg cagtttacta ctcagaagct 1620  
aaagattata ttgcaagtct gatctgtgat ggcagtagat tttgcaatgg taacaccaac 1680  
tttattcgta gtacgtacta ttattatgac aatattgatc gggcaaaaac atggggactg 1740  
25 gaaataagcg cggaaatataa tggctggggt ttctcgccat atatcagtg caatttaatt 1800  
cgctcgcaat atgaaacttc aacattaaaa acaactaata cagggtgaacc agcgataaac 1860  
ggacgtatag ggctgaaaca tactcttgtg atgggtcagg ccaacataat ctctgatgtt 1920  
tttattcgta ctgcctctag tgcaaaagat gcagtaacg gtaccgaaac aaatgttccg 1980  
ggctgggcca ctctcaactt tgcagtaaat acagaaattcg gtaacgagga tcagtaccgg 2040  
30 attaacctgg cactcaataa cctgacagac aaacgctacc gtacagcaca tgaaactatt 2100  
cctgcagcag gttttaatgc agctataggt tttgtatgga atttctga 2148

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2148

SequenceName : SEQ ID 669

35 SequenceDescription :

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
40 atgacaaaaa tgagtcgcta cgccttgatt accgcgctgg cgatgtttct cgccgggtgt 60  
gtggggcaac gtgaacctgc accggtagaa gaagtgaac cagcgccgga acaaccagcc 120  
gagccacaac agcctgtccc cacagtggcc tcggtgcca cgatcccgca gcagccaggc 180  
ccaattgagc acgaagatca aactgcaccg cctgcgccgc atattcgcca ttatgactgg 240  
45 aatggcgcaa tgcagccgat ggtcagtaag atgcttgggg ctgacggggg gactgcgggt 300  
agcgtcctgc tggttgatag cgtaacaac cgtactaacg gttcgtgaa tgccgcagaa 360  
gcgaccgaaa cgctgcgaaa tgcgctggct aataacggga aatttaccct ggtttccgcc 420  
cagcagctgt cgatggctaa gcaacagtta ggtttgtcgc cgcaggatag tttaggcacc 480  
cgtagtaaa ccataggcat tgcccgaat gtcggcgctc attacgtgct gtactccagc 540  
50 gcctctggca acgttaacgc tccgacccta caaatgcagc tgatgctggg gcagacgggc 600  
gaaattatct ggtcaggtaa aggtgccgtt tcgcagcaat aa 642

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 642

SequenceName : SEQ ID 670

55 SequenceDescription :

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
60 atgaaaagca agtactggc acttttaatt cctgccctgc tcggcgagg tgctgcacat 60  
gcagccgaag ttataataa agacggcaac aaattagatc tgtatggcaa agttgatggc 120  
ctgcattatt tttctgataa ttcagcgaaa gatggcgacc agagctatgc gcgtctgggt 180  
tttaaaggcg aaacccaaat taacgatcaa cttactggct acggtcaatg ggaatacaat 240  
65 attcaggcaa acaacactga atcttcaaaa aaccagtcac ggaccgtct ggcatttgcc 300  
ggactgaaat tttcagatta cggttctttc gattacggac gtaattatgg gctggaccga 360  
tatgctgcct ga 372

<212> Type : DNA  
 <211> Length : 372  
 SequenceName : SEQ ID 671  
 SequenceDescription :

5

Sequence  
 -----

<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

10	atggcaacac caaatcccct tgagccggtg aaaggtgccg gtacca.ctct gtgggtttac	60
	aacggcaagg gtgatgctta tgcaaacccg ttgtcagacg atgactggca gcgactggct	120
	aaggtgaagg atctgacgcc gggcgagatg acggcagaac cctacgatga taactacctg	180
	gatgatgaag acgcgactg gaccgcgacc gggcaggggc agaagt.ctgc aggagatacc	240
	agttttacgc tggcctggaa accgggagaa gaaggtcaga aagggc.ttat aggctggttt	300
15	gaaagcgggg atgtgcgggc ctataaaatc cgtttcccaa atggca.cggg ggatgtgttc	360
	cgtggctggg tcagcagtat cggtaaggcc gtgacggcga aagaagtgat caccgcgacg	420
	gtgaaagtca ctaacgtggg caaaccttcc gtggcggaag aacgcagcga aattacgccg	480
	gccactgcaa ttaaggtgac accgacatcc ggtacgggtg caaaaaggaa aacaaccacc	540
	ctgactgttt ctttttgagcc ggaaagtgc accgacaaga cgttcagagc ggtttccgcc	600
20	gatccgtcga aagccaccat tagtgtgaaa gatattgaca ttacggtaaa cggcgtggcg	660
	acaggtgaagg tgcagatccc tgtggtgagc ggaaatggtc agttcgcgcg agtggctgaa	720
	gtcacccgta ctgaagcggg cgctgcaggg taa	753

<212> Type : DNA  
 <211> Length : 753

25 SequenceName : SEQ ID 672  
 SequenceDescription :

Sequence  
 -----

30 <213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

30	atggcaacac caaatcccct tgagccggtg aaaggtgccg gtacca.ctct gtgggtttac	60
	aacggcaagg gtgatgctta tgcaaacccg ttgtcagacg atgactggca gcgactggct	120
	aaggtgaagg atctgacgcc gggcgagatg acggcagaac cctacgatga taactacctg	180
35	gatgatgaag acgcgactg gaccgcgacc gggcaggggc agaagt.ctgc aggagatacc	240
	agttttacgc tggcctggaa accgggagaa gaaggtcaga aagggc.ttat aggctggttt	300
	gaaagcgggg atgtgcgggc ctataaaatc cgtttcccaa atggca.cggg ggatgtgttc	360
	cgtggctggg tcagcagtat cggtaaggcc gtgacggcga aagaagtgat caccgcgacg	420
	gtgaaagtca ctaacgtggg caaaccttcc gtggcggaag aacgcagcga aattacgccg	480
40	gccactgcaa ttaaggtgac accgacatcc ggtacgggtg caaaaaggaa aacaaccacc	540
	ctgacggttt ctttttgagcc ggaaagtgc accgacaaga cgttcagagc ggtttccgcc	600
	gatccgtcga aagccaccat tagtgtgaaa gatattgaca ttacggtaaa cggcgtggcg	660
	acaggtgaagg tgcagatccc tgtggtgagc ggaaatggtc agttcgcgcg agtggctgaa	720
45	gtcacccgta ctgaagcggg cgctgcaggg taa	753

<212> Type : DNA  
 <211> Length : 753

SequenceName : SEQ ID 673  
 SequenceDescription :

50 Sequence  
 -----

<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

55	atgggctgga ccgatatgct gctgaattt ggcggtgact cttata.ccaa tgcagacaac	60
	tttatgactg gtccgtgcaa tggcgtcgcg acttatcgta atactgattt cttcggctctg	120
	gtaaatggtc tgaacttcgc ggtgcagtat caaggtaaca acgaagggtgc cagtaatggt	180
	caggaaggca ccaacaacgg acgtgatggt cgccatgaaa acggtgacgg ctggggctctt	240
	tccacaacat atgatttagg catgggcttt agcgtgtgtg cggcat.acac ctcttctgac	300
	cgcaccaatg accagggttaa ccatactgcg gcgggtgtgtg ataaag.caga cgcgtggact	360
60	gctgggctaa aatacagatgc taacaatatt tacctggcaa ccatgt.attc agaaacgcgt	420
	aatatgaccc cgttttgcca cagcgattat gctgttgcaa acaaaa.ccca gaactttgaa	480
	gtcactgcac agtaccagtt tgattttggt ctgcgtccgg cagtct.cttt cctgatgtct	540
	aaaggccgtg acctgcacgc tgccggtggt gcagacaacc cggcaggtgt tgatgataaa	600
	gatctgggta aatacgcgca tgttggcgcg acttactatt tcaata.aaaa catgtccact	660
65	tatgttgact ataaatcaa cctgttggat gaagatgaca gtttct.acgc tgccaacggc	720
	atctctaccg atgatattgt cgcttttaggt ctgggtttatc agttct.aa	768

<212> Type : DNA

<211> Length : 768  
 SequenceName : SEQ ID 674  
 SequenceDescription :

5 Sequence  
 -----

<213> OrganismName : Haemophilus influenzae Rd

<400> PreSequenceString :

10	atgggggttta ttatgaaact aactaaaaca gcattatgta ctgcactttt tgccaccttt	60
	acttttttcag cgaacgcaca aacttatcct gatttgccag tggggatcaa aggaggaaca	120
	ggcgcatata ttggcgacac agtttatgtg ggattaggtt ctgggtggcga taaattctat	180
	accttagacc taaaagatcc ttcagcaca tggaagaaa ttgtacatt tccgggtggc	240
	gaacgcaatc aacctgttgc agcgcagtg gatgaaaac tttatgtatt cgggtggtta	300
	caaaaaaatg aaaaaggcga acttcaactc gttaatgacg cttatcgcta taaccaagc	360
15	gataatactt ggtgaaact tctactcgt tctccccgtg gtttagtagg atcaagtggg	420
	gcactctcag gagataaagt ttatatctta ggcggctcta atctctctat atttaattggc	480
	ttcttccaag acactgtggc agcaggtgaa gataaagcga aaaaagatga aatcgagca	540
	gcttatttcg atcaacgtcc agaagattat ttctttacaa cagaattatt gagctatgaa	600
	ccatcaacca ataaatggcg caatgaaggt cgtattccat tctctggctg tgctgggtgca	660
20	gcctttacaa ttcaaggtaa tgagctagtg gttgtcaatg gcgaaattaa acctggactt	720
	cgcaccgctg aaacccatca aggtaaattc actgctaaa gtgtgcaatg gaaaaactta	780
	cctgacttac ctgctccaaa aggcacaaatc caagatgggt tagctgggtgc gctttcaggc	840
	tatagtaacg gtcatatttt agtcactggc ggcgcaaat ttccagggtc aatcaaacaa	900
	ttcaagaag gaaaacttca cgcacataaa ggtttaagca aagcttggca taacgaagtt	960
25	tatacgttga ataattgtaa atggcgcatg gttggggaat taccaatgaa tattggttat	1020
	gggtttttctg tatcttcaaa caataaagtt ttactgattg gcggtgaaac tgatggaggt	1080
	aaggctttaa ctacggtcaa agcaataagc tatgacggtg aaaaattaac catcgaataa	1140

<212> Type : DNA

30 <211> Length : 1140

SequenceName : SEQ ID 675

SequenceDescription :

35 Sequence  
 -----

<213> OrganismName : Haemophilus influenzae Rd

<400> PreSequenceString :

40	atggggagaac aatatatgct tacgacgata ctcagcttcc tcattgtaac cactgtggtt	60
	gcgtatgttt cttgggttaa aacaaaagg gatgatttaa aatcttcaaa agggatattt	120
	ttggcagggc gtgggttaag cgggttagta attggctgct caatgggtgct gacatcgctt	180
	tcaactgaac aacttatcgg tgtcaatgcg gtgtcctata aaggtaattt ttccgtgatt	240
	gcttggacag ttccaacggt tattccgctt tgtttcttgg ctctttatat aattggctgg	300
	ctataa	306

<212> Type : DNA

45 <211> Length : 306

SequenceName : SEQ ID 676

SequenceDescription :

50 Sequence  
 -----

<213> OrganismName : [Helicobacter pylori, strain J99

<400> PreSequenceString :

55	atgaaaaatc aacacaaaaa tcccctaaca aaagctttaa tgaaaaactta tccatataac	60
	catttttttat ttttctgctt tattctagga gcgtttttat taggtttgct cagtccagct	120
	tatgctttta gtattatcac cactaaagaa attgacgcta atttgcttaa tggagcgata	180
	gaaagcaggg tgggtgttag caagagggtg tttaaagtag aagctcatgg gttttatttt	240
	agaaacaatg cgactaacag catagatata gaaatcacca gtcttttaag agacaatcaa	300
	tcgtttcctt tgactagcag tgctaaaacc agtttaaaaa tacctcctaa cgccaagatt	360
	aaaaaatcca ctatccttgt ttgaaaggc gagaacgctg aagaagtggc taagatttta	420
60	ggcggttagca aagaagaata ccaaaagcta gaaaacatcg ctcaaaccaa agcggcta	480
	gaccctatgt atgctaacac gccttttagt aatggttctg atagttcctt ttacgataac	540
	aatcctaata gccctagcaa taacgctatc aatggcaag atggcgcaaa tgggagtaac	600
	ggctatgggg caaatggcaa tgatggggta aatgggatca gtgggagtaa tgggtgcaat	660
	gggagtcatt caaataataa tgcaataggc agtggatttg atacagatgg cgtgttaggg	720
65	gtggatgggg tgaatggcto tagttcttca agtggcgct ctgtaggggg ttatgagaat	780
	aatttcacta atcatggctc tactaacaat aacacaggag ggtatgacaa ttttaataat	840
	ggcagctcaa gtgggtgggag tttaggggaat ggggggcttt tccctattcc ttttggtaat	900



```

5  ggagacacaa acaattccaa taattccact aacaccacta gcccactaa tggcagtagt 960
   tctaataacg ccactaatcc tagttcgcaa gaaaacaatt actccagcca gtattgtaaa 1020
   gtgccagagt taagcccaaa caacacgatg aaactagatg ttatcgctaa agatggctct 1080
   tgtatttcta tgaacgcttt aagagatgac actaatgctg cttatagata cgattttgaa 1140
   gccggtaaag ccataacgca aacgcaatac tactatgtag atagggaaaa taaaacgcaa 1200
   aatatcggtg gtttgtgtgga tttacaaggc gctcaatacg ccatgcaact ttacaaagat 1260
   gacagcaaat gcgccttaca aaccacgagc gataaagggt atgggtatggg gaaaacgcaa 1320
   accttttcaa ctgaaatcgt gtttcgtggg atggacaatt taatccatgt cgctgtgcct 1380
   tgcagcgatt atgcaagggg gcaagacagg attgttaggt atgaaaaaaa tgataaaacc 1440
10  caaaccttaa cgcttatagt ggatcagtat tataatgatc ctaacaaccc taacaagcaa 1500
   gagattttta atcgtgggat tgccacccaa ttaagctcgc aatatcaaga atttgcatgc 1560
   ggtcaatggg aatacaatga cgctaaatta gaagccaaaa gacctacaat gctaaaaagc 1620
   tataacaagc ttaatggaga atgggtagaa gttacgcctt gtaattttga agcagggatt 1680
   aaaagcggtg cgggtgttag cccttatgtg atgggcgtgc ctagtcttaa agtcttaagc 1740
15  gatattacta caagccatta ttttaggata gaaaggaaaa attatggtga gagagaacaa 1800
   tgccaaaaaa tttatggagt caatcgttgc caaccgcaat attccatact gatcctagta 1860
   tcaccgattg gagcgccact taaaaacca ctaccacca aaccactcaa ccttatttac 1920
   gccagccca agataatgaa aaacacccca caacctataa tcttatcacc actcaaacca 1980
   ccatcaacag gactcaaagc gttttga 2007
20  <212> Type : DNA
   <211> Length : 2007
       SequenceName : SEQ ID 677
       SequenceDescription :

```

## 25 Sequence

```

-----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
30  atgcctgtta taagagtttt agtaatgctt gcaacaatga tgatgaaatt agtaaaaaacg 60
   gcaaaagaaa agaaagtttt taagaatgtg ggaatatcta taatggggat tgcttttttg 120
   gaagcgataa aagactcgat aaaaaaacia attaaaaaaa gcgattggat atgcggggaat 180
   gttaaagactg cggtatgatta tttaaaaacg catcctaact catggtttaa ttcagcaata 240
   ggtgtaacag cgataacagc catgcttatg aatgtgtgtt ttgctgatga ccaatccaaa 300
   aaagaagtgg ctcaagctca aaagggaagct gaaaacgcta gggatagagc gaacaagagt 360
35  gggatagaac tggaacaaga agagcaaaag acagaacaag aaaaaaaaaa gacagaacaa 420
   gaaaaacaaa agacagaaca agaaaaacaa aagacagaac aagaaaaaca aaagacagaa 480
   caagaaaaac aaaagacaag caatatagag actaacaatc aaataaaagt agaacaagaa 540
   caacaaaaga cagaacagga aaaacaaaag acaacaataa cgcaaaaaga tttgggttaac 600
   aaagcagaac aaaattgcca agaaaatcat aatcaattct ttattaaaaa attaggaatt 660
40  aaggctggca ttgctataga aatagaagct gaatgcacaa ccctaaaacc caaaaaaac 720
   aatcaaaccc ctatccagcc aaaacacctc ccaaactcca acaaccccca tctcaaaaga 780
   ggatcaaaag cgcaagagct tatcgcttat ttgcaaaaag agctagaatc tctgccctat 840
   tcacaaaaag ctatcgctaa acaagtggat ttttataggc caagtcttat cgcttattta 900
   gaactagatc ctagagattt taacgctaca gaagcagatg aaaaagaaaa tttaaaaata 960
45  cgctctaaag ctcaagctaa aatgcttgaa atgaggagtt taaaaccaga ccacaaagcc 1020
   cacctttcaa cctctcaaag ctttttgcct gttcaaaaaa tatttgctga tgttagtaaa 1080
   gaaataaaag tagttgctaa taccgagaaa aaagtagaaa aagcgggtta tggttatagt 1140
   aaaaggatgt ag 1152
50  <212> Type : DNA
   <211> Length : 1152
       SequenceName : SEQ ID 678
       SequenceDescription :

```

## 55 Sequence

```

-----
<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
60  atgaactacc ctaatctacc taacagcgct ttagagataa gccaacagcc agaagtgaag 60
   gaaatcacta acgagctttt aaagcaatta caaacgcgtt taaggagcaa cgcgcatttt 120
   agcagagcaag tggaattaaag ccttaaatgc atcttagga ttttagaagt gcttttgagt 180
   ttggattttt ttaagaatgc gaatgagatt gatagcagtt taagaaattc cattgagtgg 240
   ctgactaacg ccggcgagag cttgaaatta aaaaatgaaag aatacagagc ctttttttagc 300
   gagtttaata cgagcatgca tgccaacgag caggaaagtaa ccaatacctt aaacgcctaac 360
65  gccgagaaca ttaaaagcga aattaaaaag ctagaaaatc aattgataga aaccacgaca 420
   agacttttaa cgagctatca aatcttttta aaccaagcca gagataacgc taacaaccaa 480
   atcacaaaaa acaaacacca aagccttgaa gcgattacac aagctaaaaa caacgctaata 540
   aatgaaataa gcaacaatca aacgcaagcg ataactaata tcaccgaagc gaaaacgaac 600

```

```
gctaataatg aaataagcaa caatcaaacg caagcgataa ctaacattaa cgaagccaaa 660
gaaagcgcta caacgcaaat aaacgccaat aagcaagaag caataataa catcacgcaa 720
gaaaaaaccc aagccacaag cgagatcacc gaagcgaaaa agaccgatca ttatcaaaac 780
attgatTTTT ttgagtttga ataa 804
5 <212> Type : DNA
  <211> Length : 804
    SequenceName : SEQ ID 679
    SequenceDescription :

10 Sequence
-----
  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
15 gtgaattttt.tttcaaagga tttgttttaa aaagtaactc cttttttttt.aagcgtttat 60
   tttttaagcc ccacccttac gcaagccaaa agcgcgtttt atgtggcttc tcaataccag 120
   gtggggaaaa tgatcatgaa aaaatacaac gatctcaaac gcacgattga aggggcgagc 180
   tttcttttag gctgggagat taaccccaact aattactggg ttatttcgcg ctattacttt 240
   tttatggatt acgggaatgt cattctcaat aaaagaacgg gcgctcaagc gaacatgttc 300
   acttacggct ttggagggga tttgatcatg gaatacaata aaaacccttt gtatgtat tt 360
20 tctctttttt atggcatgca agttgctgaa aacacatgga cgatttccaa acacagcgcg 420
   aatttcatca ttgacgactg gcgcagcatt caagggtttt cgctcaaaac ttcaaatttc 480
   aggatgtttg gtttagtggg gtttaaattc caaacctgtc tattccacca tgacgctagt 540
   attgaagtgg ggatcaaatg gccttttgct tttgaatacg actcaccctt tgtaaggcct 600
   tttctgtctt ttatttcgca cactttctac ctttaa 636
25 <212> Type : DNA
  <211> Length : 636
    SequenceName : SEQ ID 680
    SequenceDescription :

30 Sequence
-----
  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
35 atgaaaaaat ttaccctatc gctatttttg tgttgacact tacttaacgc tgaagaggat 60
   attttttagga acaacacaaa tgaaactgat cttacaaatt cttttgaaca tggcaaaagaa 120
   aacaacaatc ttatccagc aaaatccgat agtttagaaa gtttcaaaga acaagaaaac 180
   aaagaaaaag ccaaacagct tatggattta aaggccttac agagcgtgta tttttctaaa 240
   aatagaaaaat tgcaagacaa taatttcaat gtcttgtatg tggcaggcaa caccaacaaa 300
   atccgcttac gctatgcgat gactaccacc tttatttttg ataatgatcc tattatctat 360
40 ttgagtttag gagatcctag cgattttgaa ctacttacc ccactaatga tcattacgat 420
   ttgtctaaca tgctagtgat taagccgtta cttatagggg tggatacgaa cctaaccgta 480
   gtccggagcga gcggcacaaat ttatacctta ttatttgttt ag 522
  <212> Type : DNA
  <211> Length : 522
    SequenceName : SEQ ID 681
    SequenceDescription :

Sequence
-----
50 <213> OrganismName : Mycoplasma pneumoniae
  <400> PreSequenceString :
   gtgttgatt atgtgccctg gattgggaat ggggtacagg atgggaataa ccaccggggg 60
   agcaacagta gtacgagtgg ggtaacgacc cagggacaat cccaaatgc atccagtaac 120
   gaaccgcac cgacgttttc gaatgtcggc gttggtctca aagccaatgt caacggcacc 180
55 ttaagtgggt cgcaactac gcctaatacag caaggcactc cctgggtaac cctcgaccaa 240
   gccaacctcc agctctgaac gggcgcgggg tgaaggaatg ataagaacgg acaaagtgc 300
   gaaaactaca ccaatttcgc gagtgcctaag ggcagtacga accagcaggg ttcaacaaac 360
   ggtggatcag cgggcaaccc cgactcgcta aagcaggata aggctgataa aagtggatgat 420
   tcggtaacgg ttgcagaagc cacatcgggc gacaacttga cgaattacac caacctccc 480
60 ccaacatcac cccacatcc gactgaccga acgcgtgtc attcaccaac aagaacaaac 540
   cccagcgggt cgagctgttc ctgcgcggcc tgttgggcag catcccgggt ttggtcaata 600
   agagtgggca agatgataac agtaagttta attccaccga ccaaaaatgg tcttacaccg 660
   aattaa 666
  <212> Type : DNA
  <211> Length : 666
    SequenceName : SEQ ID 682
    SequenceDescription :
```

## Sequence

-----

5 <213> OrganismName : Mycoplasma pneumoniae  
 <400> PreSequenceString :  
 gtggatgata taaccgcgcc tcaaacaccg gcgggggtcgt ccagcgggaac tagtacgaac 60  
 acaagtgggt cgcgttcctt tctcccgacg ttttcgaatg tcggcggttg cctcaaagcg 120  
 aatgtccagg gcacctcgg gggcagacag acgacgacta cggggaacaa tattcccaaa 180  
 tgagccaccc tcgaccaagc caacctccag ctctgaacgg gggcgggggtg aaggaaatgat 240  
 10 aagactacaa gtggttcaac cggcaatgcc aatgacacca agttcacgag tgctacggggc 300  
 agtgggagtg ggcagggcag ttcttcagggt acaaatactt ccgcgggggaa tcctgatggg 360  
 cttcaggctg ataaagttga tcaaaacggg caggtgaaaa caagcgttca agaagccact 420  
 tcaggggaca acttgacgaa ttacaccaac ctcccccccg ccaacctcac cccacccgct 480  
 gattgaccga aocgcgtgtc attcaccaac aagaacaacg .cgcagcgcgc ccagctgttc 540  
 15 ctgcgcgggc tgttggggcag catcccggtg ttggttaata agtccggcca agatgataac 600  
 agtaagttta aggcggaggga ccaaaaatgg tcctacaccc acttacagtc ggaccaaac 660  
 aaactgaacc tccccgctta cggcgagggtg aatgggttgt tgaatccggc gttggtggaa 720  
 acctattttg ggaacacgcg agcgagtggg tcgggggtcca acacgaccag ttcacccggg 780  
 atcggtttta aaattcccga acaaagtggc acaaacacaa cgtcgaaggc tgtgctgata 840  
 20 acccccggtt tgggttgatt gccgcaagac gtgtgtaaca tcgttgctcag tggcaccagc 900  
 ttcagcttcc agctcggcgg gtggttagtt acgttcacgg actttatcaa acccccgct 960  
 gggtacctcg ggctccagtt aacgggtctc gatgtaagtg aagcgaccca aaggaggtta 1020  
 atttgggcca agcggccctg agcggccttt cgtggcagtt gggcgaaccg gctgggccc 1080  
 gtggaagtg tgtgggattt caagggggtg tggcgggatc aagctcagtt ggccgcgcaa 1140  
 25 gcagctacaa gtagtaccac caccacgcga acaggggcta ccttacggga gcaccgaat 1200  
 gccctcgcgt accaaattag ctataccgac aaggattcgt acaaggcttc cactcaagg 1260  
 tcgggtcaaa ccaattccca aaacaattcg ccctacctcc attttattaa acctaagaaa 1320  
 gtcgaaagca cgaccacaact cgaccagggc ttaaaaaaac tgttggaccc caaccaggt 1380  
 cgcaccaagc tgcgccaaag ctttggtaaa gaccattcca cccagcccca gccccaatcg 1440  
 30 ctcaaaacaa cgacaccggg atttgggagg agtagtggtg acctcagtag tgtgtttagt 1500  
 ggtgggggtg ctggaggggg ttcttcaggc tcaggtcaat ctggcggtga tctctcccc 1560  
 gttgaacggg tgagtgggtc ctaa 1584  
 <212> Type : DNA  
 <211> Length : 1584  
 35 SequenceName : SEQ ID 683  
 SequenceDescription :

## Sequence

-----

40 <213> OrganismName : Mycoplasma pneumoniae  
 <400> PreSequenceString :  
 gtgttaaaac ttgctgttggt tatttttatt tccccacgc tcaccaggtt tagtaccggg 60  
 ttcaacctcg cgggggtcggg gctcgaccag gtgttggtatt atgtgccctg gattgggaat 120  
 gggcacaggt atgggaataa ccaccggggc gtggatgata taaccgcgc taaaaaccggc 180  
 45 gcgggggtcgt ccagcgggaac tagtacgaac acaagtgggt cgcgttcctt tctcccgacg 240  
 ttctcgaatg tcggcggttg cctcaaagcg aatgtccagg gcacctcggg tggcagtcag 300  
 acgacgacta cggggaaga tattcccaaa tgaccacccc tcgacccagc caacctccag 360  
 ctctgaacgg gggcggggtg aaggaaatgat aaggcttcaa acaacaaaag tgacgaaaac 420  
 cacaccacct ttaaaagcgc tacgggcagt ggccagcagg gtggtttctac aacgggtggg 480  
 50 tcagcgggca atcccgaatc gttaaagcag gataagatta gtaaatcagg tcagaactta 540  
 accacgcagg acggcgcgcc ccagtttaatt tcgacgacgg aatccgcgtc gaattatgat 600  
 cactcccccc ccaacctcac cccacatcc gattgaccga acgcgtgtc attcaccaac 660  
 aagaacaacg cgcagcgcgc ccagctcttc ctccgcggct tgttggggcag catcccggtg 720  
 ttggtgaatc gaagtgggtc agatgattcc aacaaattcc aagccaccga ccaaaaatgg 780  
 55 tcttacaccg acttaaaagtc ggaccaaacc aagctcaacc tccccgctta tgggtgaagt 840  
 aatgggttgt tgaatccggc gttggtggaa acctattttg ggacgacgcg agcgggtggg 900  
 tcgggggtcca acacgaccag ttacccgggt atcgggttta aaattcccga acaaaataat 960  
 gattcgaagg ctgtgctgat cacccccggg ttggcttgaa cgcgcgaaga cgttggtaac 1020  
 ctcggtgtca gtggtaccag cttgagcttc cagttgggcg ggtggctggt caccttcacg 1080  
 60 gactttgtca aaccccgccg gggttacctc gggctccagt taacgggctt ggatgcaagt 1140  
 gatcgacgcg agcgcgcctt catttgggccc aagcggccct gagcggcctt tcgtggcagt 1200  
 tgggtcaacc gcttggggcc ggtcgagagt gtgtgggatt taaagggggg gtgacaagat 1260  
 caagctcagg cggccgcgca agcagctacc accgcgcgcg caacagggga cgccttaccg 1320  
 gagcacccca atgcccctcg gtaccaaatt agctccaccg acaaggattc gtacaaggct 1380  
 65 tccactcaaa gctccgggtc aaccaattcc ccaaacacct cccctacct ccatgtgatt 1440  
 aaacctaaag aagtcgaaaa cagaccccaa ctgcaccagg gcttaaaaac ctgttggacc 1500  
 ccaaccaggt tcgcaccaag ctgcgcaaaa gctttggtac agaccattcc acccaagcca 1560

```

aaccccaatc cctcaaaaaca accacacccgg tgtttgggac gaatagtggg aacattggca 1620
gtgtgcttag tgggtgggggt gctggaggag cagacagcac caattcgggt gacctctccc 1680
ccgttgaacg ggtgagtggtg tggcttgttg ggcaattacc cagtgggggt ggggggaata 1740
gtagtggagga tattaaaagt gtgcaagaca ctccatttta tatctatatt cattagtata 1800
5 ttcttttttaa attgttcctt cactttattc atatgaacca ccgcctccct cgcgacggga 1860
ctcacccgtg tgggacactt cacaagtacc accacgacgc tcaagcgcca gcaatttagc 1920
tacacccgcc ctgacgaggt cgcgctgctc cacaccaatg ccatcaaccc gcgcttaacc 1980
ccgtgaacgt atcgtaacac gagcttttct tccctccccc tcacgggtga aaaccccggt 2040
gcgtggggcct tagtgcgcg aacacccgcc aagggcacat ctgcgggcag tggcagtcac 2100
10 caaacaccgt atgatccac ccgaaccgaa ggggctttga ccaccgccac cacctttgtg 2160
ttacgccgat acgacctcgc cgggcgttgt acgacctcga cttttcgaag ttaa 2214

```

<212> Type : DNA

<211> Length : 2214

15 SequenceName : SEQ ID 684

SequenceDescription :

Sequence

-----

```

20 <213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
gtgttggtgatt atattccctg gattgggaat gggcacagat atgggaatga ccaccggggt 60
agcaacagta gtacgagtggt ggtaacaacc cagggaacac aatcgcaaaa tgcattccgga 120
accgaacccg catccacttt ttcgaaatgtc ggcgttggcc tcaaagcgaa tgtccagggtc 180
25 acctggggtg gcagtcagac gacgactacg gggaaaagata ttcttaaattg acccaccctc 240
gaccaagcca acctccagct ctgaacgggg gcggggtggc ggaatgataa ggcttcaagt 300
ggcaaaagtg acgaaaacca caccaagttc acgagcgcta cgggcagtggt gcagcagggtc 360
agttcttcag gtacaactaa ttccgcgggc aatcccgact cgttaaagca ggataaggtt 420
gataaaagtg gtgattcggg aacggtttga gaaaccactt caggggacaa cttgacgaat 480
30 tacaccaacc tccctcccaa cctcaccccc accgctgatt gaccgaacgc gctgtcattc 540
accaacaaga acaacgcgca gcgcgcccag ctcttcctcc gcgcctggtt gggcagcatc 600
ccggtgtttg tgaataagag tggccaagat gattccaaca agttccaagc caccgaccaa 660
aaatggtctt acaccgaatt aaagtccgat caaaccaagc tcaacctccc cgcttacggg 720
gaggtgaatg ggttgttgaa tccggcgttg gtggaggtgt acggtctgag ttccactcaa 780
35 ggttctagca ccggagccgg tggcgttggg ggtaacaccg gaggcgacac caataccag 840
acttatgcac gaccgggaat cggctttaa ttacctcca cggactcgga atcttccaaa 900
gccacccctg tcaccccccgt gttggcttga acagcgcaag atgtcggtaa cctcgttgtc 960
agtgttacca gcttgagctt ccagctcggc ggggtggttg ttaccttcac ggattttatc 1020
aaaccccggt cgggttacct cgggctccag ttaacgggct tggatgcaaa tgacagcgac 1080
40 caaagggagt taatttgagc cccccgggc ctgaaccgcc tttcgtggca gttgggtcaa 1140
ccgcttgggc cgcgttgaga gtgtgtggga tttcaagggt gtgtgggcgg atcaagctcg 1200
gtccgactcg caagcagcta caagtaccac caccgcaacg aaggctacct tatcgagca 1260
caccaatgct ttggccttcc aggtgagtta taccgaccag gattcgtaca aggcttccac 1320
tcaaagctcc ggccaaaacc aaaacacctc cccctacctg cacttggtgc aggggaaaaa 1380
45 agtaggttcc tctgataa

```

<212> Type : DNA

<211> Length : 1398

SequenceName : SEQ ID 685

SequenceDescription :

50 Sequence

-----

```

<213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
55 ttgttgggca gcatcccgggt gttggtgaat cgaagtgggt ccgattccaa caaattccaa 60
gccaccgacc aaaaatgggt ctacaccgac ttacagtcgg accaaaccaa actgaacctc 120
tccgcttacg gtgaggtgaa tgggttgttg aatccggctt tggtagaaac ctattttggg 180
acgacgcgta cgtctagcac tgcgaaccaa aacagtacaa ccgtccccgg tatcggtttt 240
aaaattcccc aacaaaataa tgattccaaa gccaccctga tcacccccgg gttggttga 300
60 acgccccagg acgtcggtaa cctcgttgtc agtggcacca cgggtgagctt ccagctcggc 360
gggtgggtgg tcaccttcac ggactttgtc aaaccccgcg cgggttacct cgggctccag 420
ttaagtggcc tgaatgccag tgacagcgac caaaggaggt taatttgggc cccccggccc 480
tgagcggcct ttcgtggcag ttgggtcaac cgggttggcc gcgtggagag tgtgtgggat 540
ttgaaggggg tgtgggcgga tcaagctcag ttggccgcgc aagcagctac aagtagtacc 600
65 accaccacgg caacagggtg taccttaccg gagcaccoga atgctttggc gtaccaaat 660
agctataccg acaaggattc gtacaaggct tccactcaag gttcgggtca aaccaattcc 720
caaaacaatt cgctctacct ccatttgatt aaacctaaag aagtcgaaag cacgacccaa 780

```

```
ctcgaccagg gcttaaaaaa cctgttggac cccaaccagg ttcgcaccaa gctgcgccaa      840
agcttttgta cagaccattc caccagccc cagcccaat cgctcaaac aacgacaccg      900
gtgtttggag ccatgagtgg taacctcggc agtgtgctta gtgggtggggg tgctggaggga      960
gcaggcagca ccaattcggg ggacctctcc cccgttgaac ggggtagtgg gtcactaacc     1020
5  attaatagga atttttctta ttaa                                     1044
   <212> Type : DNA
   <211> Length : 1044
       SequenceName : SEQ ID 686
       SequenceDescription :

10  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
15  atggggccagc agggacaatc aggtacctcc gcggggaatc cagactcgtt aaagcaggat      60
    aagattagta agagtgggga tagtttaacc acgcaggacg gcaatgcgac cggtaacaa      120
    gaggccacta actacaccaa cctccccccc aacctcacc caccgctga ttgaccgaac      180
    gcgctgtcat tcaccaacaa gaacaacgcg catcgcgccc agctcttctc tcgcggcttg      240
    ttgggcagca tcccgggtgtt ggtgaatcga agtgggtccg attccaacaa attccaagcc      300
20  accgaccaa aatggtccta caccgactta cagtcggatc aaaccaagct gaacctcccc      360
    gcttacgggtg aggtgaatgg gttgttgaat ccggcggttg tggaaacctt ttttgggaac      420
    acgcgagcgg gtgggttcggg gtccaacacg accagttcac ccggtatcgg ttttaaaatt      480
    cccgaacaaa ataatgattc caaagccacc ctgatcacc cggggttggc ttgaacgccc      540
    caggacgtcg gtaacctcgt tgtcagtggc accagcttga gcttcagct cggcgggttg      600
25  ctgggtcagct tcacggactt tatcaaaccc cgcgcgggtt atttgggcct ccagttaagt      660
    ggcctgggatg ccagtgcagc cgaccaaaag gagttaattt gggccaagcg gccctgagcg      720
    gcctttcgtg gcagttgggt caaccggctg gccgcgctgg agagtgtgtg ggatttaaag      780
    cgggtgttgg cggatcaagc tcagttggcc gcgcaagcag ctacaagtga agcttcggg      840
    tcagcttttg cacctcacc gaatgctttg gcgtttcagg tgagtgtggg ggaagcgagt      900
30  gcttacagct cttcaacctc aagttcgggt tccgggtcaa gttcaaacac ctccccctac      960
    ctccatttga ttaaacctaa gaaagtcgaa agcacgacc aactcgacca gggcttaaaa     1020
    aacctgttgg accccaacca ggttcgcacc aaagcttggc aaagcttggg tacagaccat     1080
    tccaccagc cccaatcgct caaaacaacg acaccgggat ttgggacgag tagtggtaac     1140
    attggcagtg tgcttagtgg tgggggtgct ggagggggtt cttcaggctc aggtcaatct     1200
35  ggtgtggacc tctcccccg tgaacgggtg agtggtcact aa                                     1242
   <212> Type : DNA
   <211> Length : 1242
       SequenceName : SEQ ID 687
       SequenceDescription :

40  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
45  ttgggcctcc agttaagtgg cctggatgcc agtgacagcg accaaagga gttaatttgg      60
    gccaaagcgc cctgagcggc atttcgtggc agttgggtca accggttggg acgggtcgag      120
    agtgtgtggg atttgaaggg ggtgtgggcg gatcaagctc acagcgggtg gtccgagtcg      180
    caagcagcta caagtagtac caccaccacc gcaacagggg acaccttacc ggagcacccg      240
    aatgcctcgc cgtaccaa atagctccacc gacaaggatt cgtacaaggc ttccactcaa      300
50  ggctccggtc aaaccaatc ccaaacacc tccccctacc tgcatttgat taaacctaaa      360
    aaagttactg cttccgacaa gttagacgac gatcttaaaa acctgttggg cccaacgag      420
    gtccgggtga agctgcgcca aagctttggt acagaccatt ccaccaacc ccaaccccaa      480
    cccctcaaaa caacgacacc ggtgtttggg acgaatagt gtaacctcgg tagtgtgctt      540
    agtgggtggg gtaccacgca ggactcaagc accaccaatc aactgtcacc cgttcaacgg      600
55  gtgagtgggt ggcttgggg gcagttacca agcacgagtg acggaaacac ctctccacc      660
    aacaacctcg cgcctaatac taatacggg aatgaggtgg tgggggtggg agatttgtct      720
    aagcgagctt ccattgaatc aagtcgtttg tgaatagcat taaaacctta g              771

   <212> Type : DNA
   <211> Length : 771
       SequenceName : SEQ ID 688
       SequenceDescription :

60  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
```

gtgcgcgata acactgccaa gggcatcact gccggcagtg gcagtcaaca aaccacgtat 60  
gatcctgcgc gaaccgaggg caccttgacc accaccacct ttgcgctgcg ccggtatgac 120  
ctcgccgggc gcgccttata cgacctcgac ttttcgaagt taaacccaca aacgccaacg 180  
cgtgatgcca actgccagat cacctttaac ccctttggcg gctttggttt gagtggcagt 240  
5 gcaccccaac agtgaaacga ggtcaaaaaa aaggtccccg tcgaggtggc ccaagacccc 300  
accgatcctt atcggtttgc cgttttactc gtgcgcgca gtgtggtgta ctatgagcag 360  
ttgcaaaggg gattagcgct ccctaaccac gggagttcgt caggctccgg tcaacaaaac 420  
accaccattg gcgcgtatgg gctgaaggtg aagaacgcgc aggcggacac cgcaaagagc 480  
aatgaaaaac tccagggcga tgaatccaag tcttccaatg gatottcaag cacttccacc 540  
10 accacccaac gtggttcgac caattccgac accaaagtca aggttttaaa aatagagggtg 600  
aaaaagaaat cggactcggg ggacaatggt cagctgcagt tagaaaaaaa tgatctcgcc 660  
aacgctccca ttaagcgggg cgaggagtcg ggtcagtcgc tccaactcaa ggccgacgat 720  
tttgtaactg ccccttccag ttccggatca ggcggcaact ccaaccccgg ttccccacc 780  
ccctgaagcg cgtggcttgc gactgagcaa attcacaagg acctcccaa atgatccgcc 840  
15 tcgatcctga ttctgtacga tgcgccttat gcgcgcaatc gtaccgccat tgatcgcggt 900  
gatcacttgg atcccaaggt gatgaccgcg aactatccgc ccagttgaag aatgcccgaag 960  
tgaaacccac acgggttctg ggactgaaag gcgcgcgcatg ttttgttcca aaccaccggg 1020  
tttgatgaaa gtaatacttc gaacaccaag cagggtcttc aaaaggaagc tgactccgac 1080  
aagtcggccc ccatcgccct cccgtttgaa gcgtacttcg ccaacattgg caacctcacc 1140  
20 tggttcgggc aagcgctttt ggtgtttggt ggcaatggcc atgttaccac gtcggcccac 1200  
accgcgcctt tgagtatttg gctttatata tatttagtaa aggcagtcac ttttaggttg 1260  
cttttagcta actctttatt atcaaaaagc aacatatata aaaaaacagc taattaa 1317

<212> Type : DNA

25 <211> Length : 1317

SequenceName : SEQ ID 689

SequenceDescription :

Sequence

30 -----

<213> OrganismName : Mycoplasma pneumoniae

<400> PreSequenceString :

gtgcgcgata acattgccaa gggcatcact gccggtagta acacccaaca aaccacgtat 60  
gatccacccc gaaccgaggg caccttgacc accgccacca cctttgcggt acgccggtat 120  
35 gacctcgccg ggcgcgccct atacgacctc gatttttcga agttaaaccc acaaacgccc 180  
acgcgcgacc aaaccgggtc gatcaccttt aacccttttg gcggttttgg gctgagtggg 240  
gctgcacccc aacagtgaaa cgaggtcaag gataaggtcc ccgtcgaggt ggcccaagac 300  
ccctccaatc cttatcggtt tgccgtttta ctcggtccgc gtagcgtggt gtactatgag 360  
cagttgcagc gggggttagc gctccctaac caaggaggtt cgtcaggctc cgttcaacaa 420  
40 aacaccacca ttggcgcgta tgggctgaag gtgaaaaacg ccgaggcgga caccgcgaag 480  
agcaatgaaa aactccaggg ctatgaatcc aagtcctcca atggatcttc aagcattcc 540  
accacccaac gtgggggttc gtcaaatgaa aacaaagtca aggcgttgca ggtggcgggtg 600  
aaaaagaaat ccgggagtcg gggcaactcc ggtgaccaag gcaccgaaca ggtggaactt 660  
gaatctaatt atttagccaa cgccccgatt aaacgaggtt ccaataacaa ccagcaagtc 720  
45 caactcaagg cggacgattt tggtagtccc ccttccagtt cgggatacag cacccaagat 780  
ggcaccacca cccctgaac gccgtgggta acgactgagc aaattcaca cgaccccgcc 840  
aaattcgccg cctcgatcct cattctgtac gatgcgcctt atgcacgcaa ccgtaccgcc 900  
attgaccgcg ttgatcactt ggatcccaag gtgatgaccg cgaactatcc gccagttga 960  
agaacgcccc agtgaaacca ccacggtttg tgggactgaa aggcgcgcga tgttttgctc 1020  
50 caaaccaccg ggtttcttcaa cccgcgcgcg caccctcagt ggtttgatgg cgggcagacg 1080  
gtcgcgggata acgaaaagac cgggtttgat gtggataact ccgaaaaacac caagcagggc 1140  
tttcaaaagg aagctgactc cgacaagtcg gccccgatcg ccctcccgtt tgaagcgtac 1200  
ttcgccaaca ttggcaacct cacctgggtc gagcaagcgc ttttgggtgt tgggatttgt 1260  
ttgtcttaa 1269

55 <212> Type : DNA

<211> Length : 1269

SequenceName : SEQ ID 690

SequenceDescription :

Sequence

60 -----

<213> OrganismName : Mycoplasma pneumoniae

<400> PreSequenceString :

atgctttggc ctttcagggt agtgtggtgg aagcaggtgc ttacaagcca aacacgagct 60  
65 ccggccaac ccaatccact aacagttccc cctacctgca cttggtgaag cctaagaaag 120  
ttaccaatc cgacaaggtt agacgacgat cttaaaaacc tgttggaccc caacgaggtt 180  
cgcgccagaa tgctcaaact atttgggtaca gaaaatttca cccaaccca accccaaccc 240

```

caagccctca aaacaacgac accggtatatt gggacgagta gtggtaacct cggtagtgtg      300
cttagtggtg ggggggtacca cgcagggtctc aagcaccacc aatcaactgt caccggttca      360
acgggtgagt ggggtggaccg ctaa                                     384
<212> Type : DNA
5  <211> Length : 384
    SequenceName : SEQ ID 691
    SequenceDescription :

Sequence
-----
10 <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
gtgcgcgaca acagcgccaa gggcatcact gccggtagtgt aaagtcaaca aaccacgtat      60
gatccacttc gaaccgaagc ggctttgacc gcatcaacca cctttgcgtt acgccggtat      120
15 gacctcgccg ggcgcgcctt atacgacctc gacttttagta ggtaaaccac acagacacca      180
acgcgcgacc aaaccgggca gatcaccttt aacccttttg gcggcctttg tttgagtggg      240
gctgcacccc aacagtgaag cgaggtcaaa aacaaggtcc ccgtcgaggt ggcccaagac      300
ccctccaatc cttatcggtt tgccgtttta ctctgcccgc gtagcgtggt gtactatgag      360
cagttgcagc gggggttagc gtcacctaac caagggagt cgtcaggctc cgtcaacaa      420
20 aacaccacca ttggcgcgta tgggctgaag gtgaagaacg ccgaggcgga caccgcgaag      480
agcaatgaaa aactccaggc cgatgaatcc aagtcttcca atggatcttc aagcacttcc      540
accaccaccc aacgtggggg ttctgcaggg gacaccaaag tcaaggcgtt gcaggtggcg      600
gtgaaaaaga aatccgggag tcagggcaac tccggtgaac aaggcaccga acaggtggaa      660
25 cttgaatcta atgatctcgc caacgctccc attaacgcgg gcgaggagtc gggtcagtc      720
gtccaactaa aggcagccga cttcggcacc accccatcca gttcgggata aggcggcaac      780
tccaaccccc gttcccccac cccctgaagg ccgtggcttg cgaccgagca aattcacaag      840
gacctcccca aatgatccgc ctctgatcctg attctgtacg atgcgcctta tgcgcgcaat      900
cgtaaccgcca ttgatcgctg tgatcacttg gatcccaagg tgatgaccgc gaactatccg      960
30 cccagttgaa gaacgcccga gtgaaaccac caccgggtgt gggactgaaa ggccagagat      1020
gttttgctcc aaaccaccgg gttcttcaac tcgcggcgcc accccgagtg gtttgaccag      1080
ggccaagcgg tcgcgggata tacccaaacc ggggttgata cagatgacac cgataataaa      1140
aaaacaaggc ttccaaggg aagctgactc cgacaagccg gccccgatcg cctcccgtt      1200
tgaagcgtac ttgcgcaaca ttggcaacct caccctgggtc gggcaagcgc ttttggtgtt      1260
35 tgggatttgt ttgtcttaat taactaa                                     1287
<212> Type : DNA
<211> Length : 1287
    SequenceName : SEQ ID 692
    SequenceDescription :

Sequence
-----
40 <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
atgtttggct tgaaggtgaa gaacgcccag gcggacaccg cgaagagcaa tgaaaaaactc      60
45 cagggcgctg aggcactgg ttcttcaacc acatctggat ctggccaatc caccacacgt      120
gggggttcgt caggggacac caaagtcaag gcgttgaggg tggcggtgaa aaagaaatcc      180
gggagtcagg gcaactccgg tgaccaaggc accgaacagg tggaaactga atctaataat      240
ttagccaacg ccccgattaa acggggctcc aatccagcaa gtccaactca aggcagccga      300
50 cttcggcacc accccatcca gttcggaatc tgggtcaatc ggcaccccca cccctgaag      360
gccgtggctt gcgaccgagc aaattcaciaa ggacctcccc aatgatccg cctcgatcct      420
cattctgtac gatgcgcctt atgcctttaa                                     450
<212> Type : DNA
<211> Length : 450
    SequenceName : SEQ ID 693
    SequenceDescription :

Sequence
-----
60 <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
atgtttggct tgaaggtgaa ggaatgaacc gtggatagtt cgaagcaatc aacggaaagc      60
ttaaagggcg aagaatcgag ttccagttcc accacatctt ccacctccac caccacacgt      120
gggggttcgt caggggacac caaagtcaag gcgttgaggg tggcggtgaa aaagaaatcg      180
gactcggagg acaatgggtc gatcgaactt gaaaccaaca acctcgccaa cgccccgatt      240
65 aaacggggct ocaataacaa ccagcaagtc caactcaagg cggacgattt tggtaacttc      300
ccttccagtt cggaatctgg tcaatcaggc acccccaccc cctgaacgcc gtggcttgcg      360
accgagcaaa ttcacaagga cttcccaaaa tgatccgcct cgatcctgat tctgtacgat      420

```

```
ggcgccttatg cgcgcaatcg taccgccatt gatcgcgttg atcacttggga tcccaagggtg 480
atgaccgcga actatccgcc cagttgaaga acgcccaggt gaaaccacca cgggttgtgg 540
gactgaaagg cgcgcgatgt cctgggtccaa accaccgggt tcttcaaccc gcgccgccac 600
cccgattggt ttgaccaggg ccaagcggtc gcggagaata cccaaccggg gtttgataca 660
5 gatgacaccg ataataaaaa gcagggtttt cgcaacaag gcgaacaatc ccctgcccc 720
atcgccctcc cgtttgaagc gtacttcgcc aacattggca acctcacctg gttcgggcaa 780
gcgcttttgg tgtttgggat ttgtttgtct taa 813
<212> Type : DNA
<211> Length : 813
10 SequenceName : SEQ ID 694
SequenceDescription :

Sequence
-----
15 <213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
atgggcagtc aaaaccaggg ttctacaaca actacctcag cgggcaatcc cgattcttta 60
gttactgata aagttgatca aaaagggtcag gtgcaaacaa gtggtcaaaa ttaagtgat 120
accaactaca ccaacctctc ccccaacttc acccccacat ccgactgacc gaacgcgctc 180
20 agcttcacca acaagaacaa cgcgcagcgc gccagctgt tcctgcacgg ctgtgtgggc 240
agcatcccggt tgttggttaa taagagtggc gaaaataacg aaaaattcca agccaccgac 300
caaaaatggt cctacaccga attaaagtcg gatcaaacca agctcaacct ccccgcttat 360
ggtagagtgga atggggtggt gaatccggcg ttggtggaaa cctatatttg gacgacgcgt 420
acgtctagca ctgcgaacca aaacagtaca accgtccccg gtatcggttt taaaattccc 480
25 gaacaaaata atgattcaaa ggctgtgctg atcacccccg gggtggcttg aacgccccag 540
gacgttggtta acctcgttgt cagtggaacc agcttcagct tccagctcgg cgggtggctg 600
gtcagcttca cggactttgt caaacccgcg gcgggttacc tcggactcca gttaacgggc 660
ttggatgcaa gtgatgcgac gcagcgcgcc ctcatattgg ccccccggc cctgagcggc 720
ctttcgtggc agttgggtca accggttggg ccgctgggag agtgtgtggg atttgaagg 780
30 ggtgtgggag gatcaagctc agtccgactc gcaaggatct accaccaccg caacaggggc 840
taccttaccg gagcacccga atgctttggc ctttcagggt agtgtgtggg aagcagtgct 900
ttacaagcca aacacgagct ccggccaaac ccaatccact aa 942
<212> Type : DNA
<211> Length : 942
35 SequenceName : SEQ ID 695
SequenceDescription :

Sequence
-----
40 <213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
atgagttttt gtttagtggg cactgttaat aataacggtt ggaaatcgcc gtttcgacat 60
gaaacaaaat accgagcagg gtatgataag ttcaagtatt acaaaaccca ctaccgggt 120
gcaaaaaaag ctggaaccaa tgatgatcga tggagatgaa ctgcttgggt tgaccttgac 180
45 tttgcccacc aaaagatagt gctcattgaa aggggtgaac ttcaccgtca agcagattta 240
aaaaaatctg acccgcaaac aaacgaaact tccaaaaccg tttggggtag cattaaagaa 300
aagctgttac aaacgtcaa caacctccac tcagagaaaag gagtattott atggttccgt 360
caatctgggt ttacaactac tagaaactag 390
<212> Type : DNA
50 <211> Length : 390
SequenceName : SEQ ID 696
SequenceDescription :

Sequence
-----
55 <213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
atggctgaac cgttggccgt cgatcccacc ggcttgagcg cagcggccgc gaaattggcc 60
ggcctcgttt ttccgcagcc tccggcgccg atcgcggtca gcggaacgga ttcggtggtta 120
60 gcagcaatca acgagaccat gccaagcatc gaatcgctgg tcagtgcagg gctgcccggc 180
gtgaaagccg ccctgactcg aacagcatcc aacatgaacg cggcggcgga cgtctatgcg 240
aagaccgatc agtcactggg aaccagtttg agccagtatg cattcggtc gtcgggcgaa 300
ggcctggctg gcgtcgctc ggtcggtggt cagccaagtc aggtaccca gctgctgagc 360
acaccgtgt cacaggtcac gaccagctc ggcgagacgg ccgctgagct ggcaccccg 420
65 gttgttcgca cggcgccgca actcgttcag ctggctccgc acgccgttca gatgtcgcaa 480
aacgcacccc ccacgctca gacgatcagt caaacgccg aacaggccgc ccagagcgcg 540
cagggcgcca gcggcccaat gccgcacag cttgccagcg ctgaaaaacc ggccaccgag 600
```



312/341

```

caagcggagc cgggtccacga agtgacaaac gacgatcagg gcgaccaggg cgacgtgcag 660
ccggccgagg tcgttgccgc ggcacgtgac gaaggcgccg ggcgaccacc ggccagcag 720
cccggcgggg gcggttcccgc gcaagccatg gataccggag ccggtgcccg ccagcggcg 780
agtccgctgg cgcccccggt cgatccgtcg actccggcac cctcaacaac caaacgttg 840
tag
5 <212> Type : DNA
  <211> Length : 843
    SequenceName : SEQ ID 697
    SequenceDescription :

10 Sequence
  -----
  <213> OrganismName : Mycobacterium tuberculosis H37Rv
  <400> PreSequenceString :
15 atgcgttatc tgatagcgac cgcagtgtct gttgctgtgg tcctggtggg ctggccggcg 60
   gctggtgccc cgccgtcatg cgccggcctg ggcggcactg tgcaggccgg ccagatctgc 120
   catgtgcacg cctcggggccc taagtacatg ctggatatga catttcctgt cgactatccc 180
   gaccagcagg cgctgaccga ctacatcacg caaaaccgcg acgggttctg caacgtcgcg 240
   cagggggtccc cgctgcgaga ccagccctac caaatggacg ccaccagcga acagcacagc 300
20 tccggccagc cgccgcaggc caccgcagc gtagtgctca aattcttcca ggacctcggt 360
   ggggcacatc gctccacctg gtacaaggcc ttcaactaca acctcgcgac ctcgagccc 420
   atcaccttcg acacgttgtt cgtgcccggc accacgccac tggacagcat ctaccccatc 480
   gttcagcgcg agctggcacg tcagaccggt ttcggtgccc cgatattgcc ttcgaccggc 540
   ctcgaccggg ctcactacca gaactttgct atcaccgacg acagtctgat ttctacttc 600
25 gccaggggtg agctgctgcc gtcgtttgtc ggcgcttgcc aagcccagggt gcgcgcagc 660
   gccattccgc cgctggcaat ctaa
  <212> Type : DNA
  <211> Length : 684
    SequenceName : SEQ ID 698
    SequenceDescription :

30 Sequence
  -----
  <213> OrganismName : Mycobacterium tuberculosis H37Rv
  <400> PreSequenceString :
35 atgaagatgg tgaatcgat cgccgcagggt ctgaccgccc cggctgcaat cggcgccgct 60
   gcggccgggtg tgacttcgat catggctggc ggcccggtcg tataccagat gcagccggtc 120
   gtcttcggcg cgccactgcc gttggacccg gcacccgccc ctgacgtccc gacccgccc 180
   cagttgacca gcctgctcaa cagcctcgcc gatcccaacy tgcgtttgc gacaagggc 240
40 agtctggtcg agggcggtcat cgggggcacc gaggcgcgca tcgccgacca caagctgaag 300
   aaggccgccc agcacgggga totgccgctg tcgttcagcg tgacgaacat ccagccggcg 360
   gccgcgggtt cggccaccgc cgacgtttcc gtctcggttc cgaagctctc gtcccggtc 420
   acgcagaacg tcacgttcgt gaatcaaggc ggctggatgc tgcacgcgc atcgccgatg 480
   gagttgctgc agcccgcagg gaactga
  <212> Type : DNA
45 <211> Length : 507
    SequenceName : SEQ ID 699
    SequenceDescription :

50 Sequence
  -----
  <213> OrganismName : Mycobacterium tuberculosis H37Rv
  <400> PreSequenceString :
55 atgacctact cgccgggtaa ccccggtatc ccgcaagcgc agcccgcagg ctctacgga 60
   ggcgtcacac cctcgttcgc ccacgccgat gaggtgcca gcaagctacc gatgtacctg 120
   aacatcgccg tggcagtgct cggcctgggt gcgtacttcg ccagcttcgg ccaatgttc 180
   accctcagta ccgaactcgg cggaggtgat ggcgcagtg cgggtgacac tgggctgccg 240
   gtcggggtgg ctctgctggc tgcgctgctt gccggggtgg ctctggtgcc taaggccaag 300
   agccatgtga cggtagttgc ggtgctcggg gtactcggcg tatttctgat ggtctcggcg 360
60 acgtttaaca agcccagcgc ctattcgacc ggttgggcat tgtgggttgt gttggtttc 420
   atcgtgttcc aggcgggttc ggcagtcctg gcgctcttgg tggagaccgg cgtatcacc 480
   gcgcggcgcc cgccggccaa gttcgaccgc tatggacagt acggggcggt cgggcagtac 540
   gggcagtagc ggggtgcagc ggggtgggtac tacggtcagc aggggtgctc gaggccgcg 600
   ggactgcagt cggccggccc gcagcagtc cgcagcctc ccgcatatgg gtcgcagtag 660
65 ggcggctatt cgtccagtc gagccaatc gcagtggtat acactgctc gcccccggcc 720
   cagccgcccg cgcagtcggg gtcgcaacaa tcgaccagc gccatccac gccacctacc 780
   ggctttccga gcttcagccc gccgcccacc gtcagtgcgc ggacgggggt gccaggctggt 840

```

```
tcggctccag tcaactattc aaaccccagc gggggcgagc agtcgtcgtc ccccgggggg 900
gcgccgtct aa 912
<212> Type : DNA
<211> Length : 912
5 SequenceName : SEQ ID 700
SequenceDescription :

Sequence
-----
10 <213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
atgaaatgtc caggcgtctc cgactgcgtt ggcaccgtaa ggcacgataa cgtgttttgt 60
attgctgctg gtttgcgttg gtccgccgct gtaccgccgc tacacaaagg ggacgctgtg 120
accaaactgc tcgtcggggc catcgccggc ggaatgctag cttgcgcagc tatattgggc 180
15 gacggaatcg cttcggccga tactgcgttg atagtaccgc gtaccgcacc gtcccgtac 240
ggggccactca ggtcgtctcta tcatctcaat cccgcgatgc agcctcagat cggcgcgaat 300
tactacaacc ccaccgctac ccgccacgto gtttcataac caggcagctt ttggcctgtc 360
acaggcttga attcgcacc cgtcggcagt tctgtcagt cggggacgaa caatctcgat 420
gcccgcgatcc gcagcactga cggaccaatc ttcgtggccg ggttatcaca gggcacgctc 480
20 gtgcttgacc gcgagcaggc acgggttagcg aatgaccgca cggctcctcc cctggggcaa 540
ctcacattca tcaaggccgg cgaccctaac aatcttcttt ggccggcggt taggcggga 600
acccacgtgc cgatcatcga ctacaccggt cggcccccag cggaaagcca gtacgacaca 660
atcaatatcg tgggccaagta cgacattttt tctgaccgcg ctaatcgtcc gggcaacctc 720
ctcgtcgacc tcaatgcgat tgccgcgggc ggatactacg gccacagcgc caccgcattc 780
25 tcggacccag ctgcggttgc gcctaggacg attacgacga caacgaacag tttgggtgcg 840
acgaccacga cctacttcat ccggaccgat cagctacctc tgggtcgggc gctggtggac 900
atggcggggc tgcccccgca ggcggcggga acagttagtg ccgactgcgc gcccataatt 960
gacagggcctt atcagcccg accagcaccg gctgtgaacc cgcgtgattt ggtccagggc 1020
atccgcggta tccccgccat cggccctgcc atcgccatcc ctatcggcag caccaccggg 1080
30 gccagtgcgc ccaccagcac cgctgccgcc acggcagcag caacaaatgc gctccgcggg 1140
gccaacgtgg gcccgggcgc caacaaggcg ttgtcgatgg tccgggggtt gctacccaaa 1200
gggaagaagc actag 1215
<212> Type : DNA
<211> Length : 1215
35 SequenceName : SEQ ID 701
SequenceDescription :

Sequence
-----
40 <213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
gtgagcctgc taccaaccct gcagtccttc ctaccgccgc ccttcgacgc cattccgaac 60
cccatcgagg atcttgacgt tctcgtagcc gcagctgtag ccgtcgcggc tggcagtttg 120
45 ggggtatcgg cggcgacgct cggcgagatc tacccgccag acgtggtcga cgaggcccaa 180
aaggcgccgc attgccagc cgaatccgac cagacaccgc ctggggccgc ggtgacggg 240
gatctccctg aggtcggagg acgggtcacc agcccgccac agcccgcggt cgcgcgctc 300
accggctact ccgctaaccat cggcggactc tccgtgccgc acagctggaa tcttcgccca 360
gcggtgcgcc aagttgcggc gatgttcccc ggccgcgactc cgatgtatat gacggggagt 420
tcggacggct cctacgccgg cctggcagcg gcgggtttgg ccggcaccgg tctggccggg 480
50 cttgccgccc gcggtggctc cgcgccgacc ccggtgcag ccgccccggc cggagccggc 540
ggagccggcc cggctgccac caggcccgcc gccagcaga cggcccggt ccccgcggcg 600
gccgccgggt cagccatacc tggcctaccg cccggtttgc cggccggcgt ggttgccaa 660
cttgccggca cctggcggc gatccccgga gcgaccatca tcgtggtacc gccgtccccg 720
aacgccaatc aatag 735
55 <212> Type : DNA
<211> Length : 735
SequenceName : SEQ ID 702
SequenceDescription :

Sequence
-----
60 <213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
atggacgtcg ctttgggggt tgcggtcacg gatcggggtc cgcgtctggc gctggtcgac 60
65 tcggctgcgc ccggcacggt gatcgaccag ttcgtgctcg atgtggccga gcacccggtc 120
gaggtgttaa ccgagaccgt ggtgggcacg gatcggtcat tggccggcga aaaccaccg 180
ctggctcgcta cccggctgtg ttggccggat caggccaaag ctgacgagct gcagcacgca 240
```

```

ctgcaggact cgggggtcca cgacgttgcc gtgatatccg aggcgcaggc cgccacggcg 300
ctggtcgggg cggcacatgc cggctctgcc gtgctgttgg tgggtgatga gacggcaacc 360
ttatcggttg ttggtgaccc ggacgcgcgc cgcacgatgg tggccgtcgc gccggtggcg 420
ggcgccgacg ccacatcgac cgtcgatacc ctgatggccc ggctcggcga ccaggccctc 480
5 gccccggggg atgtcttcct ggtgggtagg tccgccgagc acaccacggt tcttgccgac 540
cagctgcgcg cggcgtcgac gatgcgcgtg cagactcccg acgaccccac gttcgcgctg 600
gcccgtggcg cggcgatggc ggccggcgcc gctacgatgg cgcacccggc cctggtcgcg 660
gatgcgacca cttcgtctcc cggggccgag gcggggcaat cgggttctga aggcgagcag 720
ctggcggtact cgcaggccag cgattacgag ctgcttcggg tcgacgaata tgaggaacac 780
10 gacgaatacg gggcagccgc ggatcgctcg gcgcggttga gccgacggtc gctgctgac 840
ggcaacgctg tctgtgcctt tgcggtgatc ggtttcgcct cgctggcggt gccggtggcg 900
gtcaccatcc gaccgaccgc ggctcaaaa ccggtagagg gacacaaaaa cgcccagcca 960
gggaagtcca tgcggtgttt gccgacgcaa cagcagcgcc cggtcgccgc gcctccgcc 1020
gatgatcca cgcgtggatt ccaggggcgc accattccgg ctgtacagaa cgtggtgccg 1080
15 cgcccggtta cctcaccgcg ggtgggtggg acgcggcgtt cgcctgcgcc ggaagcgccg 1140
ccgctgcgcc gtgtgttgcc tgcccgggtg ccaatcccg tccgatcat cattcccccg 1200
ttcccggtt gcagcctgg aatgccgacc accccaccg caccgcccac gacgccgtg 1260
accacgtcgg cgcgcgcgcc gccgaccacg ccgcgcacca cgcgggtgac cagcccgcca 1320
acgacgcgc cgcaccgcgc ggtgaccacg ccgccaacga cgcgcgcgac cagcccggtg 1380
20 accacgccac caacgaccgt cgcccgaac accgtcgccc cgcgcgcgac cagcccggtg 1440
accgtcgccc cgcaccgcgt cgctccagcc cgcgcgcgac cgcgcgcgac cgcctccgac 1500
ccgacgcgac agcccacgca acaaccaacc caacagatgc caaccagca gcagaccgtg 1560
gccccgcaga cgttggcgcc ggctccgag ccgcgctccg gtggcgcaa cggcagcggc 1620
ggggggcgact tattcgccg gttctga 1647
25 <212> Type : DNA
    <211> Length : 1647
        SequenceName : SEQ ID 703
        SequenceDescription :

30 Sequence
-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
35 ttgaagaacg ccgtacgac gctcatcgcc gccgcgattg cggggacggt ggtgaccacg 60
tcaccagccg gtatcgccaa tgccgacgac gcgggcttgg acccaaacgc cgcagccggc 120
ccggatgccg tgggttttga cccgaacctg ccgcgggcc cggacgtgc acccgctgat 180
actccgcggc ctccggagga cgcgggcttt gatcccaacc tcccccgcc gctggccccg 240
gacttcctgt cccgcctgc ggaggaagcg cctcccgctg ccgtggccta cagcgtgaac 300
tgggacgcga tcgcgcagt cgagtcgggt ggaactgggt cgatcaacac cggtaacggt 360
40 tactacggcg gctgcgggt caccgcggcg acctggcggt ccaacggtgg ctcgggggtc 420
gcgcccaacg cgcgcgggga ggagcagatc cgggtggctg agaacgtgct gcgttcgcag 480
ggtatccgcg cctggccggt ctgcggccgc cgcggctga 519
<212> Type : DNA
<211> Length : 519
45 SequenceName : SEQ ID 704
    SequenceDescription :

Sequence
-----
50 <213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
atgacgcggc tgataccggg ttgcacgctc gtccgggtga tgctgacgtt actgcccgcg 60
cccacctcgg cggccgggag caacaccgcc accaccctgt tcccggtcga cgaggtcacc 120
cagctggaga cgcacacctt cctcgattgc caccacaacg gcagctgcga cttcgtcgct 180
55 ggagcaaata tgcgcacacc cgcgcggccc acgggctttc cgcgcgggct gtggcgcgcg 240
caaaccaccg agatccgttc gacgaaccgg ttggcctatc tggacgcgca cgcaccagc 300
cagttcgaaac gggtaaatgaa ggcgggcgga tccgacgtga tcaccaccgt ctacttcggc 360
gaggttcgcg cggacaaata ccagaccacc ggggtcatcg actcgaccaa ttggtcgacc 420
ggtcaaccga tgaccgacgt caacgtcatc gtgtgtacac acatgcaggt ggtctacccg 480
60 ggggtcaacc tcacctcgcc cagcacctgc gcgaagcca acttttcccta g 531

<212> Type : DNA
<211> Length : 531
    SequenceName : SEQ ID 705
    SequenceDescription :

Sequence

```

```
-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
5 atgacaccgg gtttgcttac tactgcgggt gctggccgac cacgtgacag gtgcgccagg 60
  atcgtatgca cgggtgttcat cgaaaccgcc gttgtcgcga ccatgtttgt cgcgttggtg 120
  ggtctgtcca ccatcagctc gaaagccgac gacatcgatt gggacgccat cgcgcaatgc 180
  gaatccggcg gcaattgggc ggccaacacc ggtaacgggt tatacggtg tctgcagatc 240
  agccaggcga cgtgggattc caacgggtgg gtccgggtgc cggcgccgcg gactccccag 300
  caacagatcg aggtcgcaga caacattatg aaaacccaag gcccggtggtc gtggccgaaa 360
10 tgtagtctct gtagtcaggg agacgcaccg ctgggctcgc tcaccacat cctgacgttc 420
  ctgcggcgcg agactggagg ttgttcgggg agcaggggacg attga 465
<212> Type : DNA
<211> Length : 465
  SequenceName : .SEQ.ID.706
15  SequenceDescription :

Sequence
-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
20 <400> PreSequenceString :
  atgatgcaac aagcgggtgtc gggcattacc ggcgcgctcg gcggcgcggt cggcgggcgtc 60
  atgggcccac tcacgcagct tcccagcag gccatgcaag cggggcaggg agcaatgcag 120
  ccgctgatga gtgcgcttca acagacctat ggcgcgagg gactggacgt cgcggacggg 180
  gcgcggctgg tggacagcat cgaaggtgag cccggcctcg gcggcgagcc gggcgctggt 240
25 gacgtcggcg cggcgggcgg ggggtggtgg accacccga cgggctatct gggccccca 300
  cccgtgccga cgtcgtcgcc accgacgact ccagccgggg cgcggccaa gtcggtgacg 360
  ccggaccggg ttagtggcac cccgcggggc tcggggccgg ccggcatgac cggcatgccc 420
  atggtgccgc cgggcgcggt ggggtgcggg gcggaaggag ccaataagga caagccggtc 480
  gagaagcggg tgacgggctg tgccgaatgg tcaaccggtc aagggcgct taacagtacc 540
30 gccgagtgtt ccggtgaaat ctgccgacga caagccgggt gtcaccaagt cgacgcgacg 600
  gatccttggt gtgccgaacg acgacaaggt taa 633
<212> Type : DNA
<211> Length : 633
  SequenceName : SEQ ID 707
35  SequenceDescription :

Sequence
-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
40 <400> PreSequenceString :
  atgattcgcg aactggtcac caccgtcgcg atcacgggtg ccgcgatcgg tggggcgcca 60
  gtccggggcg cagaccgcga gcgttatgac ggcgatgtgc cggggatgaa ctatgacgct 120
  tcgctggggc ccccatgtct cagctgggag cgcttcattt ttggacgagg ccctccgggt 180
  caggccgaag cctgtcattt tccgcctcct aaccagttcc cgcggccga aaccggctac 240
45 tgggtgatct cctaccgct atacggcgtc cagcaggctg gtgcgcgctg tccgaagccg 300
  caggcggccg cgcagctctc ggatggggtg ccgatgctgt gtctgggagc ccgtggatgg 360
  cagccgggat ggtttaccgg ggccgggttc ttccctccgg agccataa 408
<212> Type : DNA
<211> Length : 408
50  SequenceName : SEQ ID 708
  SequenceDescription :

Sequence
-----
55 <213> OrganismName : Mycobacterium tuberculosis H37Rv
  <400> PreSequenceString :
  atgaaaacca caggcacaac tatcaaactc ggcatcgtct gggttggtgtc gtcggtgttc 60
  accgtgatga tcatcgtggt gttcgggcag gtgcggttcc atcacaccac cgggtactcc 120
  gcggtgttca cccatgtcag cgggctgcgg gccgggcaat ttgtccgcgc tgcgggcgta 180
60 gaggtcggca aggtcgccaa ggtaacgctg atcgacgggg acaagcaagt attggtggac 240
  ttaccgctgg atcgctcgct gtcactggat caggcgacga cgcctcgat ccgctacctc 300
  aacctgatcg gcgaccggtc ccttgagctc ggccgcgggtc acagcggtca gcggtggcg 360
  ccgggtgcca cgatcccgct cgagcacacc catccggcct tggatctcga cgtctgtctc 420
  ggccgggttc gccactctt ccaaacggtt gaccagaca aggtcaacag catcgctctc 480
65 tcgatcatca ccgtgttcca agggcaaggc gccaccatca acgacatcct cgaccagacc 540
  gcctcgctga cggcaacgct ggccgaccgg gaccatgcga taggtgaggt cgtcaacaac 600
  ttgaacaccg tgctggccac caccgtcaag catcaaacg aattcgaccg caggtcgcag 660
```

```
aagctagagg tgctgacac tggactgaag aacaggggcg acccgctggc cgcggcggcg 720
gcacacatca gcagcgccgc gggaacccta gccgacctgc tggggcggtat cgtccattgc 780
tgcacagcag cttcggggcac ctcgagggca tccagcagcc gctcatag 828
<212> Type : DNA
5 <211> Length : 828
    SequenceName : SEQ ID 709
    SequenceDescription :

Sequence
10 -----
    <213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
    atgactccac gcagccttgt tcgcatcggt ggtgtcgtgg ttgcgacgac cttggcgctg 60
    gtgagcgcac ccgcccggcg tcgtgccgcg catgcggatc cgtgttcgga catcgcggtc 120
15 gttttcgctc gcggcacgca tcaggcttct ggtcttggcg acgtcgggtga ggcttctgtc 180
    gactcgctta cctcgcaagt tggcgggcgg tcgattgggg tctacgcggt gaactaccca 240
    gcaagcgacg actaccgcgc gagcgcgtca aacgggttccg atgatgcgag cggccacatc 300
    cagcgcaccc tcgccagctg cccgaacacc aggattgtgc ttggtggcta ttcgcagggg 360
    gcgacgggtca tcgatttgtc cactcggcg atgccggccg cgggtggcaga tcatgtcgcc 420
20 gctgtcgccc ttttcggcga gccatccagt ggtttctcca gcatgttgtg gggcgggcgg 480
    tcgttgccga caatcggtcc gctgtatagc tctaagacca taaacttgtg tgctcccgac 540
    gatccaatat gcaccggagc cggcaatatt atggcgcatg tttcgtatgt tcagtggggg 600
    atgacaagcc aggcggcgac attcggcgcg aacaggctcg atcacgcccg atga 654

25 <212> Type : DNA
    <211> Length : 654
    SequenceName : SEQ ID 710
    SequenceDescription :

30 Sequence
    -----
    <213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
    gtgataagca ccacaagaat tgatttccta tggatattgt cggtagcggt cgcgtccatg 60
35 attgctcttg caacgctgtt gacgcttata aatcaagtcg tcggcactoc gtatattccc 120
    ggtggcgatt ctcccgcggg gaccgactgc tcggagctgg ctctgtgggt atcgaatgcg 180
    gcgacggcca ggccgggttt cggagatagg ttcaacaccg gcaacgagga agccgccttg 240
    gcggctcggg gctttcaaca gggaaccgcc cccaatgcct tgggtatcgg ttggaatggc 300
    caccacacgg cgggtgacgt gcccgatggc acgcccgtat ccagtgggtga agcgggtggc 360
40 gtgcgggtcg gtggcggtgg cgcctaccag cccaaattca cccaccacat gtatctgccg 420
    atggatgtgg acgcgggaga agaccagccg ccggcgccag atgagccggt caccgcggtc 480
    gacgacgtgg aaccggaaat gcctgcaccg tgcccagacc agcggccgcc ggtgaccccg 540
    agacataacc tgtgcaacaa actccggact atgccagggg cgtctctcgg cgcgtcggcc 600
    gcggcgggcg cggctctggc ggcccctata agcgggtgcc gcggttccag cacgtccctc 660
45 ttagcaaaaa gaaatcacc agtaatcgtc gggaaatag 699
    <212> Type : DNA
    <211> Length : 699
    SequenceName : SEQ ID 711
    SequenceDescription :

50 Sequence
    -----
    <213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
55 atgacgacga tgattactct tcggcgacgg ttgcgggtgg ccgtcgccgg cgtcgccact 60
    gccgcgcga gcaccgtcac cctggctccc gcaccagcaa atgccgccga tgtctatggc 120
    gcaattgcct actccggcaa cggctcgtgg ggccgatcgt gggactaccc aaccggggcg 180
    gctgccgaag ccaccgccgt caagtcgtgt ggtactccg actgcaaggt gctcaccagt 240
    ttaccgcct gcggcgccgt cggcccaac gatagggcac accaggagg agttggaccc 300
60 accttggccg ccgcatgaa ggacgccctg accaagctcg gcggcggcta catcgacacc 360
    tgggcctgca actaa
    <212> Type : DNA
    <211> Length : 375
    SequenceName : SEQ ID 712
65 SequenceDescription :

Sequence
```

```

-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
5 atggccggac tgaacattta cgtgaggcgc tggcggacag cgcttcacgc aaccgtgtcg 60
gcattgatat ttgccatcct cggactcgcg atcaccocgg tcgctagtgc ggcgacggcc 120
agggcgacgt tgcggtgac atcgacgtgg cagacgggtt tcatcgcccg cttcaccatc 180
acaaactcga gcacggcgcc gctaaccgat tggagcttg aattcgactt gccggcagga 240
gaatccgtct tgcacacatg gaatagcacc gttgcacgat ctggcacgca ctacgttctc 300
agcccagcga attggaatcg catcattgcc cccggtggtt cagccacggg cggcctaaga 360
10 ggcgggctga ccggttctta ctgcgcggcg tcgagttgtc tgctcaacgg gcaatatcct 420
tgcacctag 429
<212> Type : DNA
<211> Length : 429
SequenceName : SEQ ID 713
15 SequenceDescription :

```

## Sequence

```

-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
20 atgctgactc gcgctatcaa gaccagctg gtgtgttga cgggtgttggc ggtcatcgcg 60
gtgggtgtcc ttggttggtt tttcctgcgg ataccagcc tggtcggcat cggtcgatac 120
acgctttatg ccgaattgcc tcgggtccggg ggtctatacc gaacagccaa cgtcacatat 180
cggggcatca ccataggga ggtcaccggc gtcgaaccaa ccgagcgggg cgcgcgagca 240
25 accatgagca tcgacaatgg ctaccagatc cccaccgacg cctcggccaa tgtgactca 300
gtgtcggcgg tcggcgagca gttcgttgac ctggtgtcga cccgcaccag cggtcogtat 360
ctgcggcatg ggcagacgat caccacgact acggtcccca gccagattgg cccggcgctg 420
gacgcgcgca accgtggatt ggcagtgtcg cccaagacc gggtcgcgtc ggtgctgcac 480
gaggcgtcgg aggcgtgagg cgggctggga tcctcactga atcgctcat cgaagccacc 540
30 caggcaatcg cccacgatgt caggggcagc ctcgaggaca tcgacgacat catcgagcgt 600
tcggcgctta tcacgatag ccagggtcaat tcgggcaacg agatcgcccg ctgggcccgc 660
aacctcaaca cgtggccgc tcagaccgcg cagaccgatc cggcgggtgc aagcattctg 720
gccaacgcgg caccgactgc cgatcaggtc aacgccacgt tcagcgacgt gcgggagtcg 780
ttgccgcaga cgttgcccaa tctcgaggtc gtaatcgata tgctcaagcg ctaccacaac 840
35 ggcgtcgagc agcggttggg gttcttgccg cagtcggcg cgatcgccca gtcggttact 900
acagagtccc ccggccaggc cggactgggt gtcggcgccc tggcgctcaa ccaaccaccg 960
ccgtgcctga ccggttccct gccggcgctg gactggcggt cactcgctga caccagcacc 1020
gcaccgctac ccaagggcac ctactgcagg attccgatgg acgcgagcaa tgtggttcgt 1080
ggagcacgca acaaccctg tgtagacgtg cccggcaagc gggcggcgac ccgcgggaa 1140
40 tgccgcagca atgaagctta tgtgcccggg ggcaccaatc cctggtatgg ggacccaac 1200
cagatgctca gctgtccgc gccggccgcg cgttgtgacc agccgggtga gccaggccag 1260
gtgatcccg cgccgtcagt taacaatggc atcaaccgc tgcccgccga tcagctgcca 1320
ggcacacctc caccggtcaa cgatcctttg cagcgacctg ggtcaggcac cgtccagtgc 1380
aatgggcaac aaccacaacc gtgcgtctac acccgagca catttcctac aaccatttac 1440
45 gacgtgcaga gcggcaaatg cgtagcacc gacggtgtgg tgtattccgt tgaggcttcg 1500
actcatgccg gagccgacgg atggaaggtg atgctggcac caaccggctg a 1551

<212> Type : DNA
<211> Length : 1551
50 SequenceName : SEQ ID 714
SequenceDescription :

```

## Sequence

```

-----
55 <213> OrganismName : Rickettsia prowazekii strain Madrid E
<400> PreSequenceString :
atgttaaata atacacaatt tttaaatttg atgaaatcct atatgaaacc agaattttat 60
atgagttcta taaaaaatac cactaatcta gatctttcat ctatcaccaa tacaattcaa 120
aaagccatga atattttttt taccactaac aaaatttcca cagaaagtat gcaatctttg 180
60 ttttaagaaa attccgagat tatacaaaat aatattaata ctatttttaa tagtactaaa 240
gaagtaataa attctaaaga ttttaaacaa gctactgaat atcatcaaaa atgtgtaaaa 300
tctatttatg aaacatctat ggacaatgct aaggaattag caaatattgc ttatgaagct 360
tcaaataaaa tatttgaagc cgcaataaaa catattacca agaattattca taatgcttct 420
aataatatac ataatactgc agaacaagta caaaaaaact ttaataacaa atctgcttaa 480

<212> Type : DNA
<211> Length : 480

```

SequenceName : SEQ ID 715  
SequenceDescription :

## Sequence

```

5 -----
  <213> OrganismName : Rickettsia prowazekii strain Madrid E
  <400> PreSequenceString :
    atgaatatta aattagttac atatttttta atattagtaa gctcattaaa agtaaagtgt 60
    gattttaaatac atattcaaga tagtttttaa tatcaagaag cagagcagtt aacaatagaa 120
10  ttaccttgga atgactgtac tgcaattcat aaattcttag aagaaaagt atttttttca 180
    gaacaacaaa taaaaaaga aaataaaatt catgagaaat ataagcaatt ttattttacaa 240
    cataataata agctttctga tttttctatg caatttctag aaaaaaatc tgaaattaat 300
    agtgtcgaaa ctttaataatc aggcttttta aaattttgtg aagataattt tcaacaagt 360
    aaaagtaaat cgcattcttt aaattttttc.aaaaacaac aagaccaatg gttacataat 420
15  ataagaaatg agaattataa aacatattat aagaagaaat atgaagacaa tacctttaga 480
    aatattaatt aa 492
  <212> Type : DNA
  <211> Length : 492
    SequenceName : SEQ ID 716
    SequenceDescription :
20

```

## Sequence

```

-----
  <213> OrganismName : Rickettsia prowazekii strain Madrid E
  <400> PreSequenceString :
25  atgaaaaagt tacttttaaat tgctactgca agtgcaacaa ttttatcttc tagtgtatcg 60
    tttgcagagt gcatgtataa tgaatgggtat ttaagagcag atgcaggtgt agcaatgttt 120
    aataaagaac aagataaggc aacaggtgtt aaattaaaaat ctaataaggc tattccaatt 180
    gatttgggta ttggttatta tatttctgaa aatgtacgtg ctgatttaac ttagggaact 240
30  acaatagggtg gaaaactcaa gaaatacggg gcagcaacta atacacattt tactgggtact 300
    aacgtttcag tgagccataa gcctactgtt acacgtttgc ttattaacgg ttatgtagac 360
    ttaacaagtt ttgatattgt tgatgttttc gttgggtgtg gtgtcgggtc tgcattagt 420
    aaagagaaaa ttagtgggtt aagcgttctt gcatctaaca ctaaaaataa aaccaatgta 480
    tcatataagc tgattttcgg tacttctcgg caaattgcag atgggtgttaa agtagagcta 540
35  gcatatagct ggataaatga tggtaaaaca aaaactcata atgtaatgta caaaggggca 600
    agtgtgcaaa ccggtggtat gcgttatcaa agtcataacc tgacagtagg tgaagattt 660
    ggtatataa 669
  <212> Type : DNA
  <211> Length : 669
    SequenceName : SEQ ID 717
    SequenceDescription :
40

```

## Sequence

```

-----
  <213> OrganismName : Rickettsia prowazekii strain Madrid E
  <400> PreSequenceString :
45  atgaagaaga atatgagaaa gcaaatgctt aaaatcatat caatcattat tatttctctt 60
    ttattaagca gttgctccga atctacgcgt gatgaaaatg gattactttac agatagtcaa 120
    agtactataa ttogagatta tataatatcg caaaattcta aaaatcttaa agtgaacctt 180
50  aaagaaaagt ttggttccaa tttaaaagga gtaaaattaa taggaataaa gttaacaaat 240
    gaagatttat cgggaataga tttcacttca tgcgaaatat tacggactga cttcatgggt 300
    agcaacttag aaaaagcaat acttacaaat tcggtaattc aagaaaagtaa ttttgcggat 360
    tcagtaataa aaaatatttc aggtataat gctgattttc aaggttcaat ttttaataat 420
    ataacattac aaaatacaaa ttttgttcaa tcaaatttca gtgatactgc ttttaataaa 480
55  agtactataa tcaatgtcaa ttttgaaaat tctaaattta gtaatgtatt atgggtgtcac 540
    agtaatatgt acagtagtaa ttttcaaaaa actcatctaa aaaataatag ctttaaaaaat 600
    actaatgtaa tgaattcaat attttatggt gcagatttag gcaaaagtgt aataaataat 660
    acaaatttta ctaataatta ttttgaatct agtgacctaa gtaacactaa attcacatca 720
    gtaatcatta aagattctaa cttcacacaa agtattttta attcagtaaa tttcaataat 780
60  atacaaagta ataactcttt tttttcatat acttcccttg aagattcaac attacacaat 840
    attcacctta ctaaatgtga tttacaaaac agcacaatta atagttcagt tttcaataat 900
    tttaaaatcg acaatgctat attaacaatt atgagtcctc acgataatac atttaataat 960
    ttatcaataa aaaatagtaa tactaatttt gtaaggatta ataaatccaa agggtttaat 1020
    attactttac tcaatactaa ctatagtaat gctattttta gcaataatga tttaaaagaa 1080
65  tttaaagtca ttaatactga ttttaacaac agtgaaaata taaactcaaa tttcactaat 1140
    ggacaattta ataatgtaaa tttttctcaa tctttaatac aaaacgtaaa ttttacagac 1200
    gtgaaaatta ctttaggcaa tttaaatcaa gtagctctaa taaattccaa tctaataaac 1260

```

actaatatta ttaactcagt ccttttctaata tcacaaataa ataatatata ctaccaagca 1320  
 tattatagtt ttatcaatac taatgtttct aataatattg ttataaatga taattcgaat 1380  
 caaattccac caaataatat agtaaatcaat tctgaaaaag atttacaaaa catatctaata 1440  
 ttagcaataa tgaattttaac aaattttaac ttaagtaatt tagtggttaa tggagtagat 1500  
 5 ttttcaaaaa gcatcttttaa aaaagctaata ttaacaaata cagtaataaa aaattctatt 1560  
 ttaaagatg ctaatttttc tgcagcaata cttactaaaa cagatttctc aaaatcgata 1620  
 ttaacaggta gtatatttaa gtttgcctaa attgatcaga catgttttag taattccgac 1680  
 ttaacaaata ctgattttac tgaagcaaca attaaaaata ctgcatttga taatgctaata 1740  
 acacacggta taaaaggatt agaataa 1767  
 10 <212> Type : DNA  
 <211> Length : 1767  
 SequenceName : SEQ ID 718  
 SequenceDescription :  
 15 Sequence  
 -----  
 <213> OrganismName : Porphyromonas gingivalis W83  
 <400> PreSequenceString :  
 20 gtgatacaaa aattttactaa tgtaaaaacta aatgatatgc gaaaaatttt gagctttttg 60  
 atgatgtgct ctctgcattt aggtctacaa tctcagactt ggcatggaga tccggactca 120  
 gtggcagccc taccttctat cgttattcaa ggtcaagtt gtacccgaat caggttcgag 180  
 gttgttttcc ccggttttta tagtggtgaa aaacgagaag gcaaccaagt ctttcagcgc 240  
 atttccatgc cgggttgtgg ctcgtttggg aatctggggc aagctgaatt gcctgttttg 300  
 aaaaagatga tagccgttcc ggaattttca acagctaacg ttgctgtaaa aatcaaagag 360  
 25 acggagacat tcgacaatta taatatctat cctaatecta cctatgtcgt agaggagtgt 420  
 cctgaggggg ggacttatct ggtagaggct ttccgataa acaatgacta ttatagccaa 480  
 aatgtaagcc tcccttctac tcaactatgt tattctcaag acgggtattt tgcctcaca 540  
 agatttatcg aagttaccct gtatcctttt cgatacaacc ctgtccgaca agaaattcta 600  
 tttgcaaaaa aaatcgagggt tacaataact ttcgataatc ctcagccacc tttacaaaaa 660  
 30 aacaccggca tatttaacaa agtagcctcc tctgcattta ttaattatga agctgatggc 720  
 aaatcgggca tagaaaatga tatggtgttc agtcgtggta caacaacgta cataagcgga 780  
 aatgttgcca gcaacctccc tcagaactgt gactacttgg ttattttacga tgatagtctc 840  
 aacgtaaatc aacaaccaca cgacgaaatc aaacggactgt gcgaacatag agccttctac 900  
 aacggctttg atgtagctgc tgaagtata aaggacgtat tgaatagctt cccatcaaat 960  
 35 gccacctcat acatcaacga aactaaactg aaaaatttca ttogctcagt ttacaaccaa 1020  
 agcaatcgga agaggacttt agatggcaaa ctgggatacg tgctactgat cggaaaaacca 1080  
 ttgagcaaat atttggctga cactgataat acaaaagtcc caacctcttt tattcataat 1140  
 gtctccttaa ttccaagtca tccaactttt ggttccatat gcgcctccga ctattttttt 1200  
 agttgtgttt cgcccttga tactgtcggc gatttgttta tgggtcgatt tagcgtcacc 1260  
 40 aatgctcatg aattgcacaa tctgattgaa aagactatca acaaagaaat ctcatataat 1320  
 cctattgcac acaaaaatat tctttacgca aaacgggaaag gctgcgatgc tccaatctta 1380  
 cgtttattct taaaagaaat cgctctggtt tacacagtca actctatctt aaaatctaata 1440  
 caggtctctg caatagactc gatatttgac tgcttgaata atgggtccca tcatttttat 1500  
 45 tttaacactc atggaatgcc gactgtttgg gggatagggc agggactcga cgtcaatact 1560  
 ctaacagccc gatttgaacaa tacatcttcg cagggtattat gtacgagtct atcatgtagt 1620  
 tgggtgttag cagattcaac tattagatcg cttggagaag tcctgaccac atacgcacct 1680  
 aacaagggat tctcggcttt cttaggagga agcagagcca cccaatatgc cgtttattta 1740  
 gaaggccctt gtccctcgtc agaattttat gaatatttac cttattcttt atatcacaat 1800  
 50 ctctcgactg ttgttggcga aatgttgcta tcatccatta tcaatactaa ttctgttgat 1860  
 acgtattcga aattcaactt caatttgctt ggcgacctg cactaaacat tatggctcat 1920  
 ggcattggagg tttagtaattg tattacacta ccaacaacaa ccattataag cagtcggata 1980  
 acaataaaaa atggtggctg cctaaaaata ccggaanaag gagttttgca ttttactaat 2040  
 aatggctcca tacaagtcac gtccggagga actctggaaa taggcaatca ggctaaaaa 2100  
 55 tccggagaga ccggtgctaa cccacctttt attaccgttt acggcgatgg tcttgcgatt 2160  
 aacaagcagg tagagataga caatatagac cgacttaact tgttttctac gcattcggtc 2220  
 atgcccacaa ttcattttga cagtgtgaaa ttcaacagtg ccccgctgta tacaacgaac 2280  
 tgtattgtgg agataagcaa ttgcgaattt accaatcgaa gtgacattat ttcaagaat 2340  
 tgtgacctaa gcgttgaaaa cagtatgttt agcagttcgg ggataacggg attcaagcct 2400  
 atggctacaa gctccatcac cggattatct acaaaagcaa agattaccga caatactttt 2460  
 60 tttgcgacag gaaacttcgc ctaccatata acaaacacgc caggcttaac agcaacctcc 2520  
 aatgctgcca tcaagttaga caatattcct aggtattaca tttccggtta taaaatagtc 2580  
 aattgcgatg aggtctctgt actaaataat agtggaaca gaacgaacag actccacaat 2640  
 atcacacgga atgtgataaa aaactgtagg attgggagca cgctttataa ttctatggg 2700  
 atttacaacc gaaataagat cagtaacaat catataggag tacgtctcct caacaacagt 2760  
 65 tgtttttatt tcgataatgc toctgtaatc aatgaagaag ataagcagac gtttatttct 2820  
 aataggactt ggcagctcta ttcatcaaac ggtacattcc ctctcaactt ccattacaac 2880  
 agcttgcagg ggggagatac agatacatgg atttacaacg acacgtatac gaatcgctat 2940



```

attgacgttt caaataatca ctggggcaac aatgatttgt ttgatccgaa tcagggttttc 3000
aatacgccag acttgttcat ttggatacct ttttgggatg gattgccaaa tgggagatcg 3060
ggcaatagct ctgctgaagc agtagaattc caaacagcat tggactgtat tggcaatagc 3120
gattatcttt cggcaaaagt ggctctcaag atgatgggtg aaacctaccc ggaatccgac 3180
5 tttgcaatag ctgctttgaa ggaattgttc aggatagaga aaatgtcagg caacgattac 3240
gaaggcttga aagattatct cagatccaat ccaaccatca tctcttccca gaacttgttc 3300
ccgacagctg atttcctgtc tgcgcgatgc gatatttgtg gtgaaaacta tcagtcctgcc 3360
atcgattggt acgaaaatcg cttgaatagt gaaatctcct atcaggacag tgtttttgca 3420
gtcattgacc ttggtgacat ttattggaat atgcagttag actcactcag agggactggg 3480
10 atagatttga acatactttc ctgtgaacaa aggaaatcgc tcgaaagcca tcaaaatgta 3540
aaaaattatt tgttgcacac tcttcccgaa tcaacaggta ctctcctgcc tccattagaa 3600
tgcaacaaat caagccttga taaatccaag ataactctta tttcgcccaa tccggcgaaa 3660
gctgttgtaa caagcaatga ctataccgat acccttccct gttctgtaat aaaaatatat 3720
ggaataaatg gagcctcgcc tgatataacc ggggtgcccc aacatctatc cgaagggtat 3780
15 tacagcatag agttcaatag atccaacttt gatcccggtt tctacctggt aacgctaaat 3840
gttgatcaga aaattataga tacggaaaaa ttacgaatca aataa 3885

```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3885

SequenceName : SEQ ID 719

20 SequenceDescription :

Sequence

-----

```

<213> OrganismName : Shigella flexneri 2a str. 2457T
25 <400> PreSequenceString :
ttgcagggtg aaaacacgat tgtcacaacg ggggattact caattgggtt gctaagtcaa 60
acgagtggaa acctgaatac tgacaccata ataagagtca actctgacgg ttcgggtacc 120
ccctcttttt ctgacggaga tgatacattt attgttactg cgggtaatac cgcagtcggc 180
gttcttgcgt gtgcatctcc cggaaagcgc tgtgcgtgtg tatcttctct tgatgaagaa 240
30 agtactgccc atacaggaag taatgaaaat aatgccatag caaaactgga tatggcaaaa 300
ggggagatca caaccacagg aacagaaaagt tatgcgcggt acgctaattg cactgtcgtc 360
aaggctgggt acacgcttga ttataccaat gccagcgtta cattaaccga tgttgatata 420
accacgcatg gggacaatgc tcatgccatc cgtgcgccgc aggggacagt ttcatttaac 480
caggagaaaa tttatacaac gggctcctgac gccgcgattg ctaaaattta taatggcggc 540
35 acggtgacgc tgaataatca atctgcagtc gcgcacaggg ggtctggaat tgtgctggag 600
tcttccataa atggctcagga agcaacggta gatattttat ctggtagctc actacggtca 660
gcaaatgaaa tcctctacca taaagatgag acgagtaacg tgaccattac ggatagtgag 720
gtatcatcgc ctgcagatgt ttttatcaat aatattaaag gtcatttgac cgtcgatgca 780
actaattcaa aaataacggg ttcagctaata attcaacag atgataacac tcatacctat 840
40 ctgtcgcctt cagataatag tacctgggat attaaagctg actcaacggg gagcaacctc 900
acgggttgata atgacagcgt ctatatttcc cgggcagatg gacgggatgt cgaaccaaca 960
agattaacaa taactgaaaa ttacgttggg aataatggcg tattgcatct cagaactgaa 1020
ttggatgatg ataattcagc tacggataaa gtcgttatta atggaaatac ctctggaaca 1080
acccgagtta aagttaccaa tgcaggaggg agcggagctt acacgttaaa tgggatagag 1140
45 attatcagcg ttgaggggga atcaaatggg gaatttatta aggattcgag gattttcgcc 1200
ggtgcctacg aatattcatt aaccggaggt aataccgaag cgaccaataa aaactggtat 1260
ctgactaact tccaggcaac gagcggcggt gaaacaaact ccggagggaag ttcagcgcc 1320
actgttgccg ctacccccgt cctgcgcgcc gaagctggaa gttacgtcgc caacctggca 1380
gcccgtaaaa ctctttttgt tatgcgtctg aacgaccgtg cgggtgaaac gcgctacatc 1440
50 gatcctgtaa ctgaacagga gcgttcaagc cgactttggc tacgtcaaat tggcgggcat 1500
aatgcctggc gtgacagcaa cggacagtgt agaacgacct cgcacgccta cgtctcgag 1560
ttagggggcg atctgttaac cgggtggttt accgatagtg acagttggcg tttgggagtg 1620
atggctgggt atgcccgcga ctacaactta actcattcca gcgtgtcgga ttatcgttcg 1680
aaagggagtg tcagaggcta tagcgcaggg ctgtatgcca cttgggtttgc cgatgacatc 1740
55 agtaaaaaag gcgcatacat tgactcctgg gcgcaatata gctgggttta aaactccgtg 1800
aaaggggatg aattagccta tgaatcctat agcgcgaaag gtgcaaccgt ctcgctggaa 1860
gcgggttacg gttttgccct gaataaatcc tttggtctgg aagcggcgaa atatacgtgg 1920
atcttccagc cacaggcaca ggctatctgg atgggcgtcg atcataatgc gcacacggaa 1980
gccaatggct cacgtattga gaatgacgca aataacaaca tccagaccog actcggcttc 2040
60 cgcaccttta ttcgtactca ggagaaaaac agcggtcocg acggtgacga ctttgaacct 2100
tttgttgaaa tgaactggat ccataacagt aaagattttg ctgtctcaat gaacgggtg 2160
aaagtgaac aagatggggg gagtaatttg ggggaaatta aacttggcgt aaatggcaac 2220
ctgaatccag cggccagcgt ctgggggaaat gtgggcgtgc agctgggtga taatggctac 2280
aatgacaccg cagtgatggg gggcctgaaa tataagttct ga 2322

```

65 &lt;212&gt; Type : DNA

&lt;211&gt; Length : 2322

SequenceName : SEQ ID 720

## SequenceDescription :

## Sequence

-----

5 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
 gtgaccaaac tcaaaacttct ggcacttggg gtgcttatcg caacgtctgc aggcgtagcg 60  
 cacgctgaag gtaaaatttct cctgggcgca ggcgtaggtg tcgttgagca cccatataaa 120  
 gattacgata ccgatgttta ccagtagccg gtaatcaact atgaaggcga taacttcttg 180  
 10 ttccgtggct taggtgggtg ttactacctg tggaaatgac caacggataa actttcaatt 240  
 accgcttact ggtcgccgct ttacttcaaa gcgaagaca gtggcgatca ccaaatgcgt 300  
 cacctggatg accgtaagag caccatgatg gctggctctgt cttatgctca ctttaccag 360  
 tacggttacc tgcgtaccac cctggctggc gataccctgg ataacagcaa cggcattgtc 420  
 tgggatatgg cctgggttga tcgttacacc aacgggtggc tgaccgtgac tccgggtatt 480  
 15 ggtgtgcagt ggaacagcga aaaccagaac gaatactatt atggcgatc gcgcaaaagag 540  
 tccgctcgca gcggtctgcg tggctataac ccgaatgaca gctggagccc ttaccttgag 600  
 ctgagcgcca gctacaactt cctcgccgac tggagtgttt acggtagccg gcgctacacc 660  
 cgtctgtctg atgaagttac tgacagcccg atgggtggata aatcctggac tggcctgatt 720  
 tctaccggga tcacctacaa attctga 747  
 20 <212> Type : DNA  
 <211> Length : 747  
 SequenceName : SEQ ID 721  
 SequenceDescription :

## 25 Sequence

-----

<213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
 atgaaaaaaa ttgcgctagc aggtctggcc ggaatgctgt tggtttctgc atcgggtcaat 60  
 30 gcaatgagca tcagcggcca ggcgggtaaa gaatacacca atattggtgt cggttttggg 120  
 actgaatcga cgggcctggc tttaagcggc aactggacac ataacgacga cgacggtgac 180  
 gtgcgggcg tggggctggg gttgaatctg cctctcgggc cgtaaatggc gaccgttggc 240  
 ggaaaaggcg tgtacaccaa ccgaattac ggcgatgaag gttatgccg agcggtagga 300  
 ggtggtttgc agtggaataa tggcaacagc ttccgtttgt ttggcgagta ttactactct 360  
 35 ccggtatcgc tctccagcgg tattcaaagt tatgaggaag cgaatgctgg cgcgcgttac 420  
 accattatgc gtccagtcag tattgaggcg ggttatcgct acctgaatct gtcgggtaaa 480  
 gacggtaacc gcgacaacgc tgtggctgac ggctgtatg ttggggttaa cgccagtctc 540  
 tga 543  
 <212> Type : DNA  
 40 <211> Length : 543  
 SequenceName : SEQ ID 722  
 SequenceDescription :

## Sequence

-----

45 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
 atgactacct tgaccgccag ggtgttttaca acggcagaga taatttatcg gaaaacagtt 60  
 atcgcatggg tgtgtcattt aaactgtagt agacaggaga cagtccacaat gaataaaaact 120  
 50 ataattggcg ttgctatcat gatggcttca tttgccgcaa acgctctgt attaccggaa 180  
 actcctgtgc catttaaaag tggtagccga gcaattgata acgacactgt ctacattggt 240  
 ttaggttagc caggtacagc atgggtacaag ctagatacac aggccaaaga taaaaaatgg 300  
 actgcgttag ctgcattccc tgggtggaccg agagagcaag caacctctgc atttattgat 360  
 ggcaatctgt atgtgtttgg cggcattggc aaaaacagcg agggattgac tcaggtattt 420  
 55 aatgacgtac acaaatataa ccccaaaacc aatagctggg ttaaattgat gtgcgacgcg 480  
 ccgatgggca tggcgggtca tgtgactttt gtacacaacg gcaaggctta tgttactggc 540  
 ggtgttaacc agaatatctt caatggctat tttgaagatc tcaacgaggc tggaaaagat 600  
 tcaaccgcta tagataaaat caacgcccac tattttgaca aaaaagcaga agattatttc 660  
 ttcaataagt ttctgttgct ttttgatccc tcaacacagc aatggagtta cgctggcgaa 720  
 60 tcgccttggg acggaacggc tgggtgcggcg gttgtgaata aaggtgataa aacctggctt 780  
 attaatggcg aagccaaacc aggattgcga acggatgccg tatttgaact tgatttcacc 840  
 ggtaataatt taaaatggaa taagcttgat cccgtctcat caccagatgg cgtcgctggc 900  
 ggttttgccg ggataagcaa tgattctctt atatttgctg gaggggcccg attcaaaggt 960  
 tcacgagaaa attacagaa cggtagaac tatgctgatg aaggcctgaa aaaatcatat 1020  
 65 agcaactgata ttacttttg gcataacggg aaatgggata aatcgggtga attatcgcaa 1080  
 ggtcgggcct acggagtatc attgccctgg aataatagtt tattaattat tggcggtgaa 1140  
 actgcaggcg gcaaacgggt gacggattca gttttaattt ctgtgaagga taataaagtc 1200

acagtacaaa actaa 1215  
 <212> Type : DNA  
 <211> Length : 1215  
 SequenceName : SEQ ID 723  
 SequenceDescription :

5 Sequence  
 -----  
 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :

10 atggcgaactg gcggcgctgc cctggcaggt aaagcgggta tgggtgccgc agccgggtgca 60  
 gccggagggtg caagtgcact ccaagcggct ttccagaaag catcagcgag tatggaaacc 120  
 ggcgggtgaca tgtccagcat ggggtcagtt gtcagcagtg gcggaaacgg tgggtggtgaa 180  
 ggcgggtactg ctggcagtag ccatttcgcc caagcggctg gctttggtga cagcggcagt 240  
 15 agctcaagcg gtggcggctt tgccaaggcc gcgaagctgg ccacaggcac ggcctccgag 300  
 ttagccaagg gtgtcggctc tcaagtgaag cagggattcc aggagcgagt gagcgaaacc 360  
 acagggcgaa aactggctgc ttcgatacgc gaaagcatgg agccgaaaga agcaagccaa 420  
 tctggccagt tccagggcaa tagcttgggc gccgattctg gccagatag taacgaagtc 480  
 aggagttag 489

20 <212> Type : DNA  
 <211> Length : 489  
 SequenceName : SEQ ID 724  
 SequenceDescription :

25 Sequence  
 -----  
 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :

30 atgaagcgag ttcttattcc tggcgtcatt ttatgtggcg ctgatgtggc gcaggccgtc 60  
 gatgacaaaa acatgtacat gtattttttt gaagagatga cggctctatgc tcctgtccct 120  
 gtacccgtaa acggcaacac gcattacacc agtgaaagca tcgagcggtt accgaccggg 180  
 aatggcaata tcagcgatct gctgagaacc aaccctgcgg tacgcatgga ttcaacgcaa 240  
 agttacctgt tgaaccagg agatattcgc cctgagaaaa tctctattca cgggtgcgtcg 300  
 ccctaccaga atgcctattt gattgacggt attagtgcga ctaataacct gaaccagcg 360  
 35 aatgagtcag atgccagtag tgcaaccaat attagcggga tgtcacagggt gtattatctt 420  
 gatgtcagct tactggacaa tgtgacgctt tatgacagtt ttgtgccgggt tgaatttgggt 480  
 cgcttcaatg tgggggtaat tcatgcaaaag atcaaacgct tcaacgctga tgatagcaag 540  
 gtgaaatttg gttatcgac tacgcgtttg gactgggtta catcgcatat cgatgagaat 600  
 aacaagagcg catttaatac aggttcttca ggaagtacct atttctctcc agattttaaa 660  
 40 aagaactttt ataccttgct gtttaatcag gagctggctg ataactttgg cgttaccgcc 720  
 ggtttatcgc cccgccagtc tgatatcacc cgcgcggatt atgtttcgaa tgacggcatt 780  
 gtcgcccgtc gggcacagta taaaaacgct atcgatactg cattgagcaa atttacctgg 840  
 tttgccagcg accgctttac ccacgattta accttaaaat ataccggctc cagccgtgat 900  
 tataatacca gcaccttccc gcagtctgat gcgaaatgg gtaataaatc ctatgggtctg 960  
 45 gcatgttgata tggatacga actgcgatg gccaaactac gtaccacgtg tgggtgggat 1020  
 catattagtg attatacccg tcacgatcat gacatctggt acaccgaact ttcatgtaca 1080  
 tatgggtgata ttacaggcg ttgtaccggt ggcggattag gacacatttc ccaggctgta 1140  
 gataattaca ccttcaaaac acgcctggac tggcaaaaat tcgccgtggg tgatggttcg 1200  
 catcaacctt acttcggcgc ggaataacatc tattccgatg catggactga acgcataac 1260  
 50 cagtctgaat cctatgtgat taatgctgca ggaagaaaa ctaaccatac catttaccat 1320  
 aaaggtaaaag gcagcctggg aattgacaac tacacgctgt atatggcgga tcacattagc 1380  
 tggcggaatg tgtcgttaat gcccggtgtg cgttatgact atgacaacta tctgtcaaac 1440  
 cacaatatct ccccgcgctt tatgacggaa tgggatattt ttgctgatca aacctcaatg 1500  
 attaccgccc gttataaccg ttactatggc gggaatattc ttgatattggg attacgtgat 1560  
 55 atccgcaata gctggacgga atcggtatca ggtaataaaa ccctgacgcg ttatcagaat 1620  
 ttgaaaacgc cttataacga tgaactggca atgggattgc agcaaaaaat cgataagaac 1680  
 gttattggcac ccgcaagtga agcgcatgat caaatcagca aaagcagtcg taccgacagc 1740  
 gcgactaaaa ccaccattac tgaatataac aacgatggca aaacaaaaac gcattcgttt 1800  
 aacctcagtt ttgaactggc cgaacccctg catatccgcc aggtagatat taaccgcaa 1860  
 60 attgtcttta gctatatcaa gagcaagggc aacttgtcgt taaacaatgg ttatgaggag 1920  
 agcaataccg gtgataacca ggtggttat aacggtaate tggctcttta cgatagcgtt 1980  
 ccagtggcag attttaataa cccattaaag atctccttaa acatggattt cacgcatcaa 2040  
 ccgagcgggt tagtgtgggc gaatacgtg gcctggcaag aagcgcgtaa agctcgcatt 2100  
 atccttggtg agacaaatgc gcaatacatc agcgaatatt cagattacaa gcagtatggt 2160  
 65 gacgaaaaac tggatagcag cctgacctgg gacacccgct tgtcctggac gccacaattt 2220  
 ctgaaaacaac aaaacctgac gatcagtgcc gatattctca atgtactgga tagcaaaacc 2280  
 gctgttgata caacgaacac cgggtgtggcg acctacgcca gtggccgtac tttctggctt 2340

gatgtcagca tgaaatttta a 2361  
<212> Type : DNA  
<211> Length : 2361  
SequenceName : SEQ ID 725  
SequenceDescription :  
Sequence  
-----  
<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
10 atgaagaaaa cattgttagc aatcatgctg gcggggacag cttttgcttc tcaggcggga 60  
acttttagtaa gccagggtac tgaagcgtca gctaacttta ctttgaccaa gcctatcggt 120  
gttaataata ccattcaacc agtgaaagggt gtatatagcg gtacgttaac tgcattggacg 180  
cctttggcaa caggtattgt tggcgcactc gatgggcaga gccacgacta tgctgtaact 240  
15 ttcccggatg atatttatgc ggagagcagt acttcagcgg atgcagtaat ttctgggtgac 300  
aataaccggg accataaact gaaagtttcc ctgacaacgc ttgagcagga tcctccttca 360  
gctgcctccg aagagattgg cggttaagcgt tatatgatgc tgaaaaatac tggaaacaggt 420  
gggtgcctatc gcgtcgtttc ccatatgaaa gaacagggtt ttgagccaga ctcttacacc 480  
atccgtaccc aggtttatat ctacgcagaa taa 513  
<212> Type : DNA  
<211> Length : 513  
SequenceName : SEQ ID 726  
SequenceDescription :  
Sequence  
-----  
<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
30 atgggtatatt accactgggtc ccggaagaca aaaatgaaac ggacaaaatc catacgccac 60  
gcatcgttcc gcaaaaaactg gagcgcacgc catctgacac cagtcgctct cgcgggttgcc 120  
actgttttta tgctggctgg ctgtgaaaag agtgatgaaa cagtgtctct ctatcaaaat 180  
gctgacgact gttcagctgc aaacccaggc aaaagcgccg aatgtaccac cgcgtacaac 240  
aatgcgctga aagaagccga acgtactgcg ccgaaatacg ccaccgtga agactgtgtt 300  
gctgaatttg gtgaaggta gtgtcagcaa gcaccagccc aggtggcat ggcaccagaa 360  
35 aaccaggcgc aggtcagca atccagcggg agtttctgga tgccgtgat gcccggttac 420  
atgatggggc gtctgatggg cggcggcgcg ggatttgac agcagccgct gttctcctcg 480  
aaaaaccggg ccagtcgggc ttacggtaaa tataccgacg cgacgggtaa aaactatggc 540  
gcagcccagc caggccgcac catgaccgta ccgaagacgg caatggcacc aaaaccggcg 600  
accaccacta ccgttaccgg tggcggtttt ggtgaatctg ttgccaaca aagcactatg 660  
40 cagcgtagcg caaccggcac ctcttctcgt tcaatgggtg gctga 705  
<212> Type : DNA  
<211> Length : 705  
SequenceName : SEQ ID 727  
SequenceDescription :  
Sequence  
-----  
<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
50 atgacaaaaa tgagtcgcta cgccttgatt accgcgctgg cgatgtttct cgcgggtgt 60  
gtggggcaac gtgaacctgc accggtagaa gaagtgaac cagcgccgga acaaccagcc 120  
gagccacaac agcctgtccc cacagtggcc tcggtgcca cgatcccga gcagccaggc 180  
ccaattgagc acgaagatcg aacggcaccg cctgcgccgc atattcgcca ttatgactgg 240  
aatggcgcaa tgacgcccgt ggtcagtaag atgcttgggg ctgacggggg gactgcggtt 300  
55 agcgtcctgc tggttgatag cgtaacaac cgtactaacg gtctgctgaa tgccgcagaa 360  
gcgaccgaaa cgctgcgaaa tgccgtggct aataacggga aatttaccct ggtttccgcc 420  
cagcaactgt cgatggctaa gcaacagtta ggtttgcgc cgcaggacag tttaggcacc 480  
cgtagtaaag ccataggcat tgcccgaat gtcggcgctc attacgtgct gtactcctgc 540  
gcctctggca acgttaacgc tccgacccta caaatgcagc tgatgctggg gcagacgggc 600  
60 gaaattatct ggtcaggtaa aggtgccgtt tcgcagcaat aa 642  
<212> Type : DNA  
<211> Length : 642  
SequenceName : SEQ ID 728  
SequenceDescription :  
Sequence  
-----

```

<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
5  atgacgaaac ttatgcaatt tgttcagagg tgctattata tgactaataa gaaaatgtat      60
   tttatattaa tacttgtttt cacattgcta cagggtgtgtt tttttgctct ctggaagggt      120
   cgtgatggta gcacaacgtc tcttgaatgt acgtcgacgt taacaagaaa tgctaaaaca      180
   gatcattctt tatactactc tgctaaccct tcagtcattt taaaaaaga tggtagcgggt      240
   agttttacga ttgttggtt aactgatgaa gatacaccga ggaaattttc ccattcgtat      300
   ttttttacct acaaaataga tagtaacgga cggatctcag gtaatgctaa ggccaaagt      360
   tcggggactgg aaaatcagat aaaggatgag aacttcagac tcaattttct cgatgcatct      420
10  ttaacaggta aaggcaatgc gaggctaagc aagtttaata atgtctatat ttttagtatc      480
   ccgggggttga tcattaacac atgtgctcca atataa      516
<212> Type : DNA
<211> Length : 516
   SequenceName : SEQ ID 729
15  SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
20  atgggcagga taagctcggg aggaatgatg ttttaaggcaa taacgacagt cgcgcactg      60
   gtcatcgcca ccagtgcaat ggcgcaggat gatttaacca ttagcagcct tgcaaagggc      120
   gaaaccacca aagctgcgtt taatcagatg gtgcaagggc ataagctacc tgcatgggtg      180
   atgaaaggcg gtacttatac tccgcacaaa accgtaacgt tgggagatga gacgtatcag      240
25  gtgatgagcg cgtgcaaac gcctgactgt ggctcgcaac gtatcgctgt gatgtggtcc      300
   gagaaatcta atcagatgac ggggctgttc tcggctattg atgagaaaac gtcgcaagag      360
   aaactcacct ggctgaatgt gaacgatgag ctttcgattg atggtaaaaac ggtgctgttc      420
   gcggcggtga cgggcagcct ggaaaacat ccggatggct ttaattttaa ataa      474
<212> Type : DNA
<211> Length : 474
   SequenceName : SEQ ID 730
   SequenceDescription :

35  Sequence
-----
<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
40  atgaaaaaac aatttttggg aaaagctgtg tttactgttg cggctacggc agcaacagtt      60
   gtttttaggaa ataaaatggc tgatgcagac acttatactc ttcaagaagg agattctttt      120
   ttcagtgttg ctcaacgata tcatatggat gcttatgagt tagcttctat gaatggaaaa      180
   gatattacca gtctgatttt gccgggtcag actttaactg ttaatgggtc gccagcaccg      240
   gataatcagg cggcagcgcc aactgacact acgcaagcaa cactgaaac gaatgatgcg      300
   aatgcccaata cttatcctgt tggccaatgt acttgggggg ttaaagctgt tgcaacttgg      360
45  gcaggcgact ggtggggcaa tggcgggtgat tgggcctcta gtgcttctgc acaaggttac      420
   actgtcggta aactccggc agtaggggtct attatgtgtt ggacagatgg tggttatgga      480
   catgttgctt atgtcacagc tgttggtgaa gatggtaaag ttcaagtact ggaatccaat      540
   tataaagatc aacaatgggt tgataactat cgtggttggg ttgatccaaa taatagtgga      600
   acaccaggca gtgtcagtta tatttatcct aactaa      636
50  <212> Type : DNA
   <211> Length : 636
   SequenceName : SEQ ID 731
   SequenceDescription :

55  Sequence
-----
<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
60  atgtctatta aaaatathtt agaaaacaaa acaacaacaa ttaaagttag ttttgcagga      60
   attgcaacag cagctagttt aattttacct atggcagtac aggcagaaac tacttatact      120
   gtgaaatcag gagatacttt atcagagatt gcttcaacac acggaacaac tgttgataaa      180
   cttgctaagt taaataaaat taataatata catcttatcc atgtggttca aatttttagaa      240
   ttagatgcag caacagaaga tactgatgca acgccagtac aagaaagtca gataaatgaa      300
   gcagaaacct cagcatctgc caaaactagt caaacgagcg aagtgcagac aacagcaccg      360
65  gtacaagaaa gccaaacaag tgaagttata acttcagcac cagctgaaac cagtcagaca      420
   agcgaagtgc caactgaagc caaccaacaa aatgaagtaa gttcagcagt atcggttgaa      480
   accagtcaaa cgagtgaggc gacgacttca gctccagtgg aaactagtca gacaagcgaa      540

```

```

gcaacgacag cggaaccaac tgagaccaag accagccaaa caaatgaagt agcagcttca      600
gctgaagaaa accaaacaac atctaatact agcgggtttga gcacatctga tgcagctgca      660
aaagaattca tcgctcaaaa agaatcaggt ggtaattata atgctaaaaa tgggtcaatat      720
tatggacggt atcaattgag tgattcttac ttgaatgggtg atttgtcaga agaaaatcaa      780
5 gaacgtgtag cagatgctta tgtatcaagt cgttatgggt catggactgc tgcacaagct      840
ttctggaatg ctaatgggtg gtatttaa                                     867
<212> Type : DNA
<211> Length : 867
      SequenceName : SEQ ID 732
10      SequenceDescription :

Sequence
-----
<213> OrganismName : Streptococcus mutans UA159
15 <400> PreSequenceString :
atgaaatgtc aagcgtttga agattttaaa gctacaagtt tgaataagct gtcttatcacg      60
acaggtggag ctactgatgg tgaaattata gctaactcga tgttacaagg taaagctact      120
aagggcgaaa ttactatgta tacttggaaac attattcaaa atggctgggt gaattcactc      180
gtgtcttggg gtattgggtg ttataaatgt tctataggat actcagctca aggtaataga      240
20 ggatttagta attatccata cgatgtttct atggattcag ataatagcag tagttcaagt      300
aatacgacag gtggttatgt taattataac cagagtttta attctggatg gtaa          354

<212> Type : DNA
<211> Length : 354
25      SequenceName : SEQ ID 733
      SequenceDescription :

Sequence
-----
30 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
atgcgctatt cacaaatttg tcgtaaaagt ttggctttgc tggctacagg aatgatttta      60
actacctcaa ccttacctag tataagtatt ctagctgagg acagtactgg agcacctgct      120
aggccagatg gacaagctcc tgctggaggt ggtgctaaca ccacaactta tgattacagc      180
35 ggaatcaaca gtggtgttct agttgctaag ggtagcaagg tcaacttcag ttccaaaacc      240
aaatcaacta cttccgcccc aaatacagct cttgttcaaa acggtggtag tttaacactg      300
cataaagcga atttaataaa atccgggtgat gataacaatg gtgacaatga taatttttac      360
gggtattaatt ctattttact agcagtcaat gaaaggtaaa aagcttatgt ttcgaattcc      420
aaactaaaag ctagtagctc tggcagtaat gggatttttg caactgataa ggcaaccatc      480
40 tacgctaata aaacaagcat tgcgactaca gctgataatt cacggggact tgatgccact      540
tacaatggca atattattgc taataagatg gccatttcta caaaagggtc tcacagcgct      600
gctattgcaa ctgaccgtgg tggcggcaat atttccacca ctaattccag tttaaatact      660
agtggctctg gctcacctct tctttattca acaggcaata ttcaagttaa tcacgttaca      720
ggaacatcta gtaacagcca aattgctggt atggaagggtc ttaataccat tcttattcat      780
45 aattctaatt taattagtag catgacaaac aaaactgcca gtgacccgat tgccaatggc      840
gttatcatct atcagtcaca atccgggtgat gccgaagcaa caacggggca aagtgccac      900
ttcgagctca gcaagtctaa attaacttct tccattactt cagggttctat gttctacctg      960
acgaatacct ctgcaaacat tatccttaat caatccacct tgaattttga tgcaaataag      1020
gctaaacttt tgactgtagc aggcataagt gccataaatt ggggaacccc cggtagtaat      1080
50 ggggcaacag ttaactttac tggccataag cagacactta aaggggatgt tgatgtggat      1140
agtatttcga ccttaaatat gtacctgctt gataaaacca actacactgg caaaactgct      1200
gtatcaacca acagtaccaa tatatcccca agcacgtctc ctattacctt gaatatttct      1260
aaaaattcca aatgggtgct aactgggtcat tcgacagtaa ccaatctcaa tgctgaaaaa      1320
gggtgtaaaa ttgttgataa agacggaaaa accgtcagcg tcatctcttc aagcggacaa      1380
55 aaacttgtaa aaggtaaaag caaatatagc ctaacagtca caggaactta cagtcaaaag      1440
gtaacaacca gctcaagtaa caaaccagc agcagttaca ttaaccgtag tgacttcgat      1500
aattatttta aaacaacaac agcctttgta aataatacca aaaatacaag taattaa      1557

<212> Type : DNA
60 <211> Length : 1557
      SequenceName : SEQ ID 734
      SequenceDescription :

Sequence
-----
65 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :

```

```

5   atgaacaaga taggtgatac tctacgtgat gctcgtattg aaaaaaaatt gagttttgat      60
   gatgttgtag ataaaaactgg aattgctcct cactatatac tggcaatgga gtttagatcaa      120
   cttaaatat taccagaagg caaaacaaat gagtatttag aaaaatatgc tcatgctggt      180
   ggcttagatc cggtttctat tattcatggt tatcgcaatc aggaaatgag cgatgaactt      240
   atcctacctt cttctgcaga attggctgct tcttcagata gcaatataga aaagaaaaat      300
   gaaggaaaat caattgaaga acctcaagag ttagctattg atagtttgga tgttactcaa      360
   aatattacag aagagactcc ccaaatagaa gattttaagg ttgaatcaga ggaggcaagt      420
   aaaaaaatag aaaaaatacc atctcgactt agtaaatatg attatgatga agaaccgaa      480
   aagaaatttc catgggcttt aattctgcta attttacttg ctttaactat tatcagttat      540
10  gttggatatg tggtttataa tcagctgcaa actgattcaa ataagactga attaagtacc      600
   tctacgaaaa aatctaagga tactaaaaat gatgccaatt caacgcacaca aagtcagacc      660
   agcataacaa cagactttgc tgatgggtga aataatatca ccttaagtaa tactaatgga      720
   aaagttaggg ttacttttac tttgacaggg gatgaggaaa gttgggtttc agcaactaac      780
   actactgatg gagaatctgg aacaactcta acagcaacag ataaaactta tactgttact,      840
15  ttagcagaag gttaacaac atctatgctg acagtcggat cacctagcgg tgttgaaatt      900
   acgatcaatg gtcaaaaggg ggatactaca aaccttgtaa atgctgggtt gactaatatt      960
   aatttgacag tccaataa
<212> Type : DNA
<211> Length : 978
20  SequenceName : SEQ ID 735
   SequenceDescription :

```

## Sequence

-----

```

25  <213> OrganismName : Streptococcus mutans UA159
   <400> PreSequenceString :
   atgaagagca gaaaaactga gcgaaaaggg ctgggtcgaa aaaatgaaat cattatttta      60
   actctttttg tcgcatcagc cgtttcactc ttagcattta ccaattcttt tggggtaactt      120
   gctaagagtc tccatcttga aaaaatcaat aaatcgataa ctatttcgct tccttttgggt      180
30  aaaaaaaga tggaacaaac agcacgttac tattcagggtg aacagggttca gatcagttcc      240
   tcagctaaaa aagacagtct tggaaaaggg ctgtctcatt accaaaattg gattgggaca      300
   gttaaaaaga taaaatcaca aaagacagc cgtcaaaagc atcattatag ttatgaagtt      360
   acatttgata atggcaaagc tttgaaatat gttcaggaaa aagacttagt taaaacaaaa      420
   agatctaaat acagcaaagg tcaaattgtc aaattaaaat cctctgcgac agctgattta      480
35  gatggcagca gtttaacgga ttatcgtgca tcagctggta aaatcgatca tatttcttat      540
   aatcatagca ataccacagg tggctataag tatgatatca cctttgatga aggcggcaag      600
   gtgactaata ttcaagaaaa agatttggat aaggtttatg aagttcagct aaaatcagaa      660
   aatactgcag ctcaaaataa tgagattcct aaacaagctt ttgcatatgc taaacaacat      720
   tctggtacta tcttaagttt gccaaacggt gaatttaaga ttggcagtc gacaccagac      780
40  aaggattata tcaatttaac atctgatact gaaattcgtg gagataatac gacacttttg      840
   gttgaaggat cggcttattg gtttgctttt gcaactggga catcagctag tgatgggtga      900
   aagaatttca ccatgcgcaa tatcaatata aaagccagtg atttggaaaa aggaaatcag      960
   tttatgatta tggctgatca tgggtgataat tggaaaattt gtaacaatag ttttaccatg      1020
45  gtgcataaaa aaggaagcca catttttgac ttaggttcct tgcaaaattc agcttttgaa      1080
   ggaatatcaat taactggcta tggcctgaa ttaactaatg tcagtaagat tgatgataat      1140
   gcagatcttc atgattttta ttcagaagtt atccagctgg atgccgctga gtctagcggg      1200
   gtttgggatg gtgggttgat aaaggctatt gatccaaatt atgaaaatta taataaagag      1260
   aaacagttgt gcaataacat cagcattgct aataactcct ttgttcctta tatagacagt      1320
   catggtaaaa taatagcata cagcggaact atcggacagc actcttctga tgtcggcctt      1380
50  gtcaaaattt atgataatgt ttttagtaac tctttggtca gccgtttcaa tcaaaatggc      1440
   aaaagcgagg cgtggatttt taaagctatt cacctaaaaa caaattataa taatgctggt      1500
   tatgccaat ctatcagtta a
<212> Type : DNA
<211> Length : 1521
55  SequenceName : SEQ ID 736
   SequenceDescription :

```

## Sequence

-----

```

60  <213> OrganismName : Streptococcus mutans UA159
   <400> PreSequenceString :
   atgagaaaac ttaaagtggc actttttgca agcagtattt taggaatgct ggctgttagt      60
   tcttatacgg cagcagatac agaggataat caggtaacga ttagccatta taatgaacag      120
   gctggaactt ttgatgtcaa cgctgtacag gcagccaacg gaaaaactat tcaatcgata      180
65  gatgttcgca tttggtctga agaaaatggg caggatgatt tgaaatggta tcatgccagt      240
   aatgatggca gcaatcaatt gacagttcat tttaatgctg agaatcatgg cagtaaggta      300
   ggttcttata ttgcgcatgc ttatattacc tatacagatg gtaatcgagt cgggggtaat      360

```

```

      ttgggaaaaac gaaaattatc cttatctgca cgcgaattat ccttaaaaaca aggtggcctt 420
      caactatttt ctaagctgaa acctagtgcg gcggatcaac ttttttcagc agtttggtcg 480
      gatgagaatg gtcaagatga tcttcattgg tacacggcag atgctgacgg gaatactttg 540
      gctggctatg ctaatcataa aggttatgga acttaccatg ttcatactta ccttaagcaa 600
5      aatggtaaga tgataccaat tagtgctcaa gatattgata ttctaaacc gaaagtcaag 660
      attcagattg ataaaaataa tgataccagt tatgatgttg ttgttaataa tgtcccccct 720
      tatattagtt cagtagccat tcctgtgtgg agtgaacaaa atggccaaga cgatttgaaa 780
      tggatcagg caacaaaagt ggctgatggg atatttataa caactgttta tttaaagaca 840
      catcggtttg aattaggcaa ctatcaagct catatttatg gcgatagcca attaagcaag 900
10     aaactggatg gtttaggaga aactcatttt aatgttcctg ctattattaa ctatgaagat 960
      cctcaggtaa ctattgatca ttataatatt aacaaaggaa cgtttgatgt gactgtagct 1020
      gaaacagata attcaaaagc gatacaatca atcagtgcgt ctggttggtc tgatgctaac 1080
      caagctaate tttattggta tgaagctaaa cagctagcaa atggaaaagg tgcaattact 1140
      gtcgatgttc aaaagcatgg caatcaaaaca ggaagctaca atgtccatgt ttatgttcat 1200
15     tataatgatg gcacgactag cggacatgtt ttggctaate agcagctcaa tcaaattgtc 1260
      cattatcaac cttctgcagt aagaataaca gctatatga atgaaaaaaa tacttatcca 1320
      gttggtcagt ttaattggga agtgaaagaa tttagctcct ggatacctaa ttggcttggc 1380
      aatggcgggc agtgggcaag tactgtagct gttaagggat tcaaaatagg aactgttctt 1440
      aaagtgtgtg ctattgcttg ttggagtgat ggtggttatg gccatgttgc ttacgttacc 1500
20     cacgttgaga gtaataaccg tattcaagtg aaagaagcta attataagaa tcaacaatat 1560
      atttccaatt ttgcgggatg gtttgatccc acgacttctt atttgggaag attaacttat 1620
      atttatcctg actaa
      <212> Type : DNA
      <211> Length : 1635
25     SequenceName : SEQ ID 737
      SequenceDescription :

      Sequence
      -----
30     <213> OrganismName : Streptococcus mutans UA159
      <400> PreSequenceString :
      atggcaata actattctcg tcgtcaacaa cccactaaaa aaacaaaggg gacaagtcgg 60
      aaacgtccga ctgaacatat caaaacaggt ttttcagcac tgcaaaagag tgttgctatt 120
      atcgctggta ttttagggat tattaccgct ttgattacta ttaataatta tcgcaatagt 180
35     tcacacaatg ataaaaaaga ttccacatct aaaaccacta tcatcaaaaga aaaagaagtg 240
      gatgactcaa atagtaacaa caatgctgct aattctcaag ctgaaaatga cagcaataac 300
      aataataatt ctgcagaatc aaatcaaaac caaactgcaa caacagcaaa tgacagtaac 360
      agcaattcgg ctaatcaaaa tcaagccaat agccaatcac aagcaataa tcagcaaaat 420
      caaaacaatg ctaatgctgg tcaataa
      <212> Type : DNA
      <211> Length : 447
40     SequenceName : SEQ ID 738
      SequenceDescription :

      Sequence
      -----
45     <213> OrganismName : Streptococcus mutans UA159
      <400> PreSequenceString :
      ttgaaaatat ttagtttttg aaccattcga aacaacacag ctctaaaacc taactatgat 60
50     gacacaacag ctttttagcg ttttggaaac attcgaaaca acacagctct aaaacagagc 120
      actaactgcg ctagctggtt caatcgtttt ggaaccattc gaaacaacac agctctaaaa 180
      ctacacatat taattaatgg cgtttccttt tgttttggaa ccattcgaaa caacacagct 240
      ctaaaacctc gtggaccaat tttgtctcgt acatttcgta atcgcgccat tcatctcagc 300
      cagatttcag cttcaaaatg a
      <212> Type : DNA
      <211> Length : 321
55     SequenceName : SEQ ID 739
      SequenceDescription :

      Sequence
      -----
60     <213> OrganismName : Streptococcus mutans UA159
      <400> PreSequenceString :
      atgaaaagaa aacgaaatct ttactttctt attggtttat ttttgacagt ctttcttttg 60
65     ataggatgct caatgcagaa aaaaaccaaa tcagaaagca gctcgacttc tcaaaagact 120
      acttttcaaaa caaaacagtc aagtgaaaaa tcaactgatg ctaagcaaac gacagaagct 180
      cattcagaaa gcagtcagtc ttcttctcat tctaataacg aggaaaccct tgctcccatt 240

```



gatacaggcg ctgtttttaa ggctgattac agtagtatgg cagggaacttg gaaaaatgaa 300  
gaaggacaaa cggttgacatt tgatcagcga ggtctgacaa cccctggaat gacagtcagt 360  
ctgttgaaca ttgatcaaga cggaaatcct ttgttaaattg ttgagactgg aacaaaaaag 420  
aatctaactc tttatattgt gccagccaat aaaaccttat ctaatacaata tttttctaata 480  
5 ggtcaaaagcg atgaatccga taaaacaaaa gatcgtattg tttctcttga gagttaaata 540  
agtggcaaat ttacaaaaccg agttttattat catgtttcaa ctcattaa 588  
<212> Type : DNA  
<211> Length : 588  
SequenceName : SEQ ID 740  
10 SequenceDescription :  
  
Sequence  
-----  
<213> OrganismName : Streptococcus mutans UA159  
15 <400> PreSequenceString :  
atgacaccta aaaaaatcaa aatagctcta acagctctta tctctttgat gctcgcctta 60  
tttttattct tgttttaatca ccattcagta agagaaaaa gtcagcaaga aaagttaaag 120  
ataagtaaag caagttctaa aaaatcacaa acaagcactt cttctgttat gacaagtagt 180  
cgaaaagcta ctgaacaaac aagccaagca cagactcaaa gtcaatcaca agcagaacaa 240  
20 agtaacccta atgtgatcct ccccatctcg caagaattag tcggcaccta caaagggttcg 300  
agtcacacaag catctgaaat aactttttacc atttcttcaa atgggtcaatt acgtgctcaa 360  
gctaattttg atcctgcttc tgatataaat gacgttaccg ccactgttag tgggtgttaga 420  
aaagtcgggg cagataccta tatttggggag tttgtctctg gtatgtcagc tgctctttta 480  
ccgggtgtta caggtatagg agggcttgga aagatgcagc ctgggtttcat cctaaaagg 540  
25 gggcaattaa cacctatcat gtttacagg tctgtagatg gtgaaattga ttattcacat 600  
cccaatccct atccagtatc attaaacaag cagtaa 636  
<212> Type : DNA  
<211> Length : 636  
SequenceName : SEQ ID 741  
30 SequenceDescription :  
  
Sequence  
-----  
<213> OrganismName : Streptococcus mutans UA159  
35 <400> PreSequenceString :  
atgaaaaaaa taattaatgt tatcgtctta tcactatccg tttttttcct gatagcttgc 60  
agcaatagca gtaccgggga aaaaacaagt caatcatctg aagagactaa ggtccgatta 120  
attgttaaaa cggattctaa taaaaccgat gaaaaagtcg ctttcaaaaa aggtgctact 180  
gttatggatg tcttaaaaga caactataaa gttaaagaaa gcggtggttt tatcactact 240  
40 attgatgggtg tcactcagga taaaaagca ggtaggtact ggatgtttga tgtaaatgat 300  
aagctggcat caaaagctgc tgataagatt aagggtcaaaa atggggataa aattgaattt 360  
tatttgaaag tttataaagg taagaactag 390  
<212> Type : DNA  
<211> Length : 390  
45 SequenceName : SEQ ID 742  
SequenceDescription :  
  
Sequence  
-----  
50 <213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :  
atgtcaaata aaccatggga agaaaaagta actgatgcaa ctactgataa tgaagaaatg 60  
acaagaaatt caaaggatgc tagtattatc agtacaccta ttttaacaat cctattgagc 120  
ctctttttct tgattattat tgggtatttta tttttgttac tttatacttc aaatgggtga 180  
55 agcaatgaaa aagcagccac ttcgggtttc tatagttctt ccaaaccggt caaaaaagcc 240  
aaaaatgagg caaatagtca aactgatgaa cagacaacag aagcagaaac aagttcaagt 300  
gaaacgacaa gttcctcttc agacagtgat ggcgagacaa ttacagttca aggaggtgaa 360  
ggggctgcag caattgctgc gcgtgcgggt atttctgttg ataaactcta tgagctgaat 420  
ccagaacata tgacgcatgg ctattggtat gctaaccctg gagataacat caagattaag 480  
60 taa 483  
<212> Type : DNA  
<211> Length : 483  
SequenceName : SEQ ID 743  
65 SequenceDescription :  
  
Sequence  
-----

<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :  
5 atgccagata atcgcatgaa ctatagtatt gatagcaata tgcagtttcc cttggttagaa 60  
attacttttg aaacaggaga atttgcttat attcaacgcg gtagcatggg ctatcacaca 120  
cccagtgtca ctctcaatac caaagtcaat ggacgtgggt caggacttgg caagctagta 180  
ggagcaattg gtcgttctgt aacgtctgga gaaagttttt tcattactca ggcagtatca 240  
aatgctagcg atggtaaatt ggccttggcc ccttctatgc cgggccaaagt tattgcttta 300  
gaattgggag aaaaacaata tcgcctcaat gatggtgctt ttcttgcctt agatggttct 360  
gctcaatata aatgaaaagc tcagagtgtt ggacgtgccc tttttggcgg tcaaggcggg 420  
10 ctttttggtta tgacaacaga aggtcaaggg accttgcttg ctaatagttt tggttctatc 480  
aaaaaaatag aattacagaa tcaggaaatt acaattgaca atgctcatgt ttagcttggg 540  
agtagggatt tgaactatga cattcatttg gaaaaaggct ttatgcaatc gatcggaacc 600  
gggtgaaggcg ttgtcaatac ttccgagga acgggtgaaa tttatgtaca aagtcttaat 660  
ctgcagcagt ttgctgggtgt cctacagggt ttcatatcca atactaatcg ttaa 714  
15  
<212> Type : DNA  
<211> Length : 714  
SequenceName : SEQ ID 744  
SequenceDescription :  
20  
Sequence  
-----  
<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :  
25 atgaaaaaaaa attatttttg gtacggtctg cttgggcttc tcgcacttta cttattact 60  
attgctttta tcccgggatt tcatattttc tttagcaaca tgttgatgtt ggccctgttc 120  
tttatgttaa tagctttgag taacaggagt atcttctttt tctttctagc cttaggtttt 180  
cttagtatct acttgaaaga tatctttcat ttgactatt ctaccggacc gctttttacg 240  
gggtataatca atttcggcgt tattttaaac agtttctca aaccacacta ttcttattct 300  
30 tataaaggaa atcattattt taatatgaaa caacatgcta actacattga taacgaaaca 360  
gatgtctttt taaaaacact tttttctgaa aataccagtt atgtgacttc tcaagaatta 420  
aataaaatta ttattgatac taagtttggg gaacaatctg ttgatctctc tcaagctcaa 480  
tttatgacag atttcccga aattcatata gatgttagct ttggtgaaac caatctgcgt 540  
attccaaaca actggaaaat catcaataaa actcactccc ctttggcttc catttcattt 600  
35 tcaggttttc ctagcaciaa tgggtatttt attaacgtta cattgactgg aacagtggct 660  
atgggatctc taaacattca atattaa 687  
<212> Type : DNA  
<211> Length : 687  
SequenceName : SEQ ID 745  
SequenceDescription :  
40  
Sequence  
-----  
<213> OrganismName : Streptococcus pneumoniae R6  
<400> PreSequenceString :  
45 atgaaatcaa taactaaaaa gattaaagca actcttgtag gagtagctgc cttgtttgca 60  
gtatttgctc catcattttg atctgctcaa gaatcatcaa cttacactgt taaagaagggt 120  
gatacacttt cagaaatcgc tgaaactcac aacacaacag ttgaaaaatt ggcagaaaaac 180  
aaccacattg ataacattca tttgattttat gttgatcaag agttgggttat cgatggccct 240  
50 gtagcgcttg ttgcaacacc agcgccagct acttatgcgg caccagccgc tcaagatgaa 300  
actgtttcag ctccagtagc agaaactcca gtagtaagtg aaacagttgt ttcaactgta 360  
agcggatctg aagcagaagc caaagaatgg atcgctcaaa aagaatcagg tggtagctat 420  
acagctacaa atggacgtta tatcggacgt tacggttcat ggactgctgc taaaaacttc 480  
55 tggcttaaca atggctggta ttaa 504  
<212> Type : DNA  
<211> Length : 504  
SequenceName : SEQ ID 746  
SequenceDescription :  
60  
Sequence  
-----  
<213> OrganismName : Streptococcus pneumoniae R6  
<400> PreSequenceString :  
65 atgaaacatt cacataaaaa atcatttgac tggatatgca tgcaacaacg ttattctatt 60  
cgtaagtatt actttgggag agctagtgtc ttgctcggtt ccgctttggg attaggtgca 120  
gcagctagtg tccaaacagt acaagcggaa gaaaacaaac aagaaactac caatagtatt 180  
tctgttggtg ggggagaagc agctactaaa ccagcagagg tttctgcgtc taataaagag 240

	aaaacccatg	cagctccaac	tgtagctaat	ccagtagaaa	cgactccagt	taaaaactgaa	300
	gaagttacta	aaccagcaga	aaaagttgaa	gaagcaaaaag	acaaaaaaga	ggaagtaacg	360
	catcaagatg	ccggttgacaa	gtcaaaaatta	tttaacggctc	tttcgcgtgc	taaaaaatta	420
5	gaaagcaagt	tatatacaga	agcaagtgtc	gtctaacttgc	aaacaagtat	ccaagctggg	480
	caaaagcttg	ttggaaaagc	agatgcaact	gaagctgaat	tatcagcagc	agagtcatct	540
	attcaatcat	ttattattgg	tctagaactt	cggttctaact	ctaataaaga	aactgtatca	600
	gaaacgcctg	tagcgaagaa	agctgatgca	gttgaatcaa	aagaaggggc	taaaccagct	660
	gcaacaactg	aacgttcagc	tgttgatagc	gctattttgc	caactagcac	agctgacaaa	720
10	gtagaaacaa	cttcagctcc	agcatctatt	aatgaaatct	tgaacttagg	tttgagcctt	780
	tctgatgctc	gccaaaatcc	agctatccgt	aaggaagatg	ttaatagagg	gtatagtggt	840
	tttagagcgg	ctagcaatcc	agccaaccca	attgtctcag	gttctggaaa	tacagttgca	900
	tttgagata	ttagccaagg	tggtcgtagc	tatagtttcc	gtggctacgg	gaactcacgt	960
	gggtgaaatt	ctattcattt	cgatgtaaca	acagtagcta	gtggtaatag	tggttaacttt	1020
	acaattagtt	attctgcgcc	aggagattct	agagagtttg	ttaataataa	ttttatcttg	1080
15	gataaagggg	atggatttgg	aatccttcca	aatgcaacga	tcacaagttc	aaatccaaga	1140
	gtaagggagc	aatcaaaaatc	tattagttag	gggtgccaact	acgtatctca	ctcaggatag	1200
	agtagaacct	ctgctatttc	aacaataacg	gaacaaacta	tcagatttag	tttgccatct	1260
	attaatctaa	atgggtgattt	gtctgttctg	ttgaaacctg	ttacttttaa	cgtaggacaa	1320
	gggtggtggt	gtgcccgtac	tagcaatgac	ccatacagta	actctaacta	ttattataga	1380
20	gcaaaccacg	tatacttggg	tgcaaacctt	tatgggtggt	ctaataataa	gactgtttca	1440
	gaagcgaatt	acttccaaac	gtcttatctt	ccaactagta	agttaccaga	aggtcaaacg	1500
	agattagttc	gagaagggtga	aaaaggacaa	cgtaaaatta	cctataaagt	tcacgcgattt	1560
	ggtaacgaaa	cacttttagg	attgcccgtt	agtaaatagtg	ttactaaaga	agctaagcca	1620
	cgtattatgc	aaattgggtg	ggctaaagat	ctaattcgata	cagtaaaacc	acgtgttgat	1680
25	caaaaataag	tcggtgatac	aaataaacct	actttctatc	ttgataacga	tggaacgggt	1740
	gtttatactg	aagggtgtaga	cgaacttggt	caaaaaattg	ctattaaaga	tgtagctaaa	1800
	gggtgaaaaag	gagaccaagg	tgaacgcggg	ctaactggag	ctaagggtga	aaaaggagac	1860
	cgaggcgaac	gcggtctaac	tggagctcaa	ggagctaaag	gtgaaaaagg	agaccgaggt	1920
	gaacgcggtc	taactggagc	tcaaggagct	aaagggtgaa	aaggagaccg	aggtgaacgc	1980
30	gggtctaacc	gagctcaagg	agctaaagg	gaaaaaggag	accgaggcga	acgcggtcta	2040
	actggagctc	aaggagctaa	aggtgaaaaa	ggagcccga	gtgaacgcgg	tctaaccgga	2100
	gcacaaggag	ctaaagggtga	aaaaggggac	caagggtgaac	gcggtctaac	cggagcacaa	2160
	gggtcccaag	gtgaaaaagg	ggaccaagg	gaacgcggtc	taaccggagc	acaaggagct	2220
	aaagggtgaa	aaggagccca	aggtgaacgc	gggtctaact	gaactcaagg	agctaaagg	2280
35	gaaaaaggag	accgaggcga	acgcggtctg	actggagccc	aaggagctaa	aggtgaaaaa	2340
	ggagaccgag	gcgaacgcgg	tctgactgga	gcccagggtg	ctaaagggtga	aaaaggagcc	2400
	caaggtgaac	gcggtctaac	cggagcccaa	gggtgctaaag	gtgaaaaagg	ggaccaagg	2460
	gaacgcggtc	taactggagc	acaagggtga	aaaggagacc	gaggcgaacg	cggtttaact	2520
	ggagctaaag	gtgaaaaagg	ggaccaagg	gaacgtggtg	tcaactggag	taaagggtga	2580
40	aaaggagccc	aagggtgaac	cggtctaacc	ggagcccga	gtgctaaagg	tgaaaaagg	2640
	gacccaagg	tagtaagaga	tggatttgat	gggtgcaagc	aaggagccca	aggtcaggca	2700
	gggtcgtgac	gtgtaactcc	aaccgtaacc	gttaagata	ataaaaaatga	cggcactcat	2760
	actatcacta	tttaacgacg	tagaggtaat	gttacaagta	ctgttgtaag	agatgggttt	2820
	gatggcgcaa	gtccattagt	tgcgactcaa	cgaaatgacg	cagataaagc	aacaactggt	2880
45	atcttctatt	acgtataaaa	tggaacaact	ggtattagat	cttctgataa	gaaattaaaa	2940
	gaagttgtta	ttgcagatgg	tgctaaagg	gaaaaagggg	acaaagggtga	acaagggtct	3000
	caagggcggt	atggtgaaca	aggacaaaaa	ggagaagatg	ggaaaaacccc	aacaggttaa	3060
	gtaactgatg	gtcaagatgg	aacgcataca	attacaatta	acgatggtaa	aggtgggtata	3120
	actactacag	tagtaagaga	tggatttgat	gggtgcaagc	ctcttggttt	tactcataga	3180
50	aatgaagcag	ataaaacaac	aactgttatt	ttctattatg	atctaaatga	taataatcaa	3240
	tttgatgaag	gagatacaaa	acttaagaa	gttggttatcg	cagatggaaa	acaaggacca	3300
	aaagggtgac	aagggtgataa	cggaaaagat	ggatttcacac	cagaagtaac	agttacagat	3360
	aacaataacg	gaacacacac	catcacatcc	acacaaccag	acaacagacc	atcattaaca	3420
	acaatcgtta	aaaacgggtga	agatggaaaa	acaccaaaag	tcaaagcaga	acgagatgat	3480
55	gcgaagaaac	aaacaacatt	aacattctac	attgacaaag	atggagatgg	aagttacaca	3540
	gcaggaaaaag	acgagttagt	tcaaacacaa	gtagttaaag	acggacaaga	cggagctgca	3600
	ggagcatctg	gacgtgatgg	aaaagaagta	ttaaaccgaa	aagtagacc	aacaacagaa	3660
	ggtaagatg	gagacacatt	cgtaaatata	caaacaggag	atgtattcgt	taagaaagg	3720
	aacacttggg	aaccagcagg	aaacatcaaa	ggaccgaaag	gtgacaaagg	tgcataggt	3780
60	gccaaagggt	aaaaaggagc	ccaaggagaa	cggcgccctga	ctggagcgca	aggtgtcaag	3840
	gggtgaaaaag	gagatcagg	tgaacgcgg	ctaactggat	ctaaagggtga	aaaaggagac	3900
	caagggtgaac	gcggttttaac	tggagcgcaa	gggtgccaaag	gtgacaaagg	tgaacaagg	3960
	cttcaagggt	gtgatggagc	tcaaggacca	aaaggagcag	atggacaaag	aggaccagcg	4020
	ggaccacaag	gacaaaaagg	agaacaagg	aatccaggaa	ctccaggtaa	agatggaaaa	4080
65	tctctaattg	ctgttaaaaa	tgggtgtatta	gtacaaatta	caccagtaga	aggtcgtcca	4140
	caaacaacat	ttgttagagga	tgggacaaaag	gggtcgtatg	ggaaaactcc	aacagtaaca	4200
	ataactgagg	ggcaaaacgg	cacacataca	tttaacgggtc	ataatccagg	aagtccagat	4260

	gtgacaacta	cgatccgtga	tggagctaca	ggacaagcag	gtcgtgatgg	taaagatgta	4320
	ttaaaccggaa	aagtaaattcc	acaaccaaac	caaggtaaaa	atggagataa	atatattaat	4380
	atcgaaaccg	gtgatgtcta	tgttaaaaac	aatggaaact	gggataaaga	aggcaaatc	4440
	aaaggcccta	aaggtgacaa	aggtgcagat	ggtgctaaag	gcgaaaaagg	agaccaaggc	4500
5	gaacgcggcc	taactggagc	gcaaggagct	aaaggtgcgg	atggcgagc	aggtcgtgat	4560
	ggacgtgacg	gtaaagacgt	ggtgaacggc	aaagctaacc	cagaagcaca	tcaaggtaaa	4620
	gacggcgata	aatacgttaa	tacagaaaaca	ggcgacgtct	tcgttaagaa	taacggcaac	4680
	tgggataaag	agggcaacat	caaaggccct	aaaggtgaca	aaaggtgcaga	tggtgctaaa	4740
	ggcgaaaaag	gagaccgagg	cgaacgcggc	ctgactggag	cgcaaggagc	ttaaagtgcg	4800
10	gatggagcag	caggtcgtga	cggacgtgat	ggacgtgacg	gtaaagacgt	ggtgaacggc	4860
	aaagttaacc	cagaagcaaa	tcaaggtaaa	gacggcgata	aatacgttaa	tacagaaaaca	4920
	ggcgacgtct	tcgttaagaa	taacggcaac	tgggataaag	agggcaacat	caaaggctct	4980
	aaaggtgaca	aagctgaacg	cggagaagat	ggttaagactc	cagaagtaac	tgtaactcca	5040
	ggtaaaagatg	gccatagtac	tgacattaca	ttcactgttc	caggtaaaaga	tccagttaca	5100
15	gtaaatgtta	aggacggaga	aaatggtctg	aacggtaaaa	ctccaaaagt	tgatttactt	5160
	cgtgtccaag	gaaaaaacgg	aaatccatct	catacaattg	tgacattcta	tacagatgaa	5220
	aacaaatgacg	gcaaatatac	accaggaact	gaatgaacttc	taggttcaga	aattgattaaa	5280
	gatgggtgcta	aaggcgcgga	cggacgagat	ggtaaatcat	tgcttactgt	caaggatggg	5340
	aaagaaaacta	aagttttacca	agaagatcca	gctaaccagg	gacaaccatt	aaatccagaa	5400
20	aaaccacttg	cggtaattag	agatggagta	gatggaaaat	cacctacagt	tacagctggt	5460
	cgtaaagatg	aagcagggca	taaaggtgta	aaatcactctg	ttgataacca	tgatggttca	5520
	caaccaacta	cagtctttgt	tcaagatggt	gctaagggaa	aaactggtgc	aaccggtcag	5580
	gatggacaaa	ctcctacaat	cactactcaa	cgtgggacaag	atggccaaag	cactgttgta	5640
	actatcacaa	catcaggtaa	agatccagta	accttcactg	taaaagatgg	taagaatggg	5700
25	aaagatggcc	gtgcaccgaa	aatcaaagta	gaatgaattta	cttcaccttc	aagaattaga	5760
	cgcgatacag	atgctgctgc	aactccaacg	cgtaacggta	tccgtgttac	agtttatgat	5820
	gatgttaatg	acaatggggg	atcgcagcaa	ggtgtcgata	aagtattaaa	tagtaagat	5880
	atttataacg	gtatagatgg	acgtgatggt	tcagctccaa	ctattactac	aaaagataat	5940
	ggagaatgaa	ctcacactat	cacagttcaa	aaaccagatg	gttctgaatc	aacaacagtt	6000
30	gttaaagatg	gtaaagacgg	taaaactgcg	aatatcacta	caacagaaaa	cccagatgga	6060
	agccacacaa	ttacggtgac	aaatccagat	ggttcaacta	aagaaaactgt	tgttaaaaac	6120
	ggtaaaagacg	gtaagactcc	taaagttgaa	gtaacggata	acaacgatgg	aactcatact	6180
	gttaaatgga	cagatggaga	cggcaatggt	accaacgcta	tcatacaaga	tggtaaagac	6240
	ggtaaaagctg	caacagcaac	aactactgaa	aatccagatg	gaagccacac	agtaacaatc	6300
35	actaaccag	acggaactaa	gaatgagttt	gttggttaaga	atggacgtga	cggtgttgac	6360
	ggacgtactc	caaccgcac	tgctcgtgat	aatggagacg	gaagtcatac	aatcggtatt	6420
	acaaatccag	aagctgtgac	aaactgaaac	atggtaaatc	accaaagtg	accaaagtg	6480
	actataactg	atgaacaaaa	tggaaactcat	aagatctctg	ttctaaatgg	tgacggaaca	6540
	actactgaaa	caatcattaa	agatggtaaa	tcaccagtag	caacagttag	agataaccaa	6600
40	gatggtaactt	acactattcg	tgtggaaaac	ggtaaatggt	ctgtttctga	aaccacagtt	6660
	cgtgaatggta	aatcaccaac	tgctaagggt	gtggataatg	gagatggaac	tcacactatc	6720
	acagttgtga	actcagacgg	aataactaca	acaactacag	ttcgtgatgg	tagagaacca	6780
	aaacttgaaag	ttattgataa	caacgatggt	tcacacacta	ttaaagtga	aggtgctgat	6840
	ggtaaaaggaa	cgacaactac	aatctttgat	ggtaaatcac	caaaagcgaa	catcggtgat	6900
45	aacggagatg	gaactcatac	attaacaatc	gtgattctg	atggctcgtga	atacaaatct	6960
	attatcaaag	atggtaaaaga	cggcaaaagt	agcgtttcac	caactgtaac	tggtaaaaat	7020
	aataacgatg	gaactcacgt	tgttacaatc	actaatccag	atggaaagta	gacagaaatg	7080
	gtgattaaag	acggtaaaaga	tggtaaatca	ccaaaagtgt	ctgttgaaga	taatgggtgat	7140
	ggtagtcata	caatcacaa	catcaattct	gatggaaactg	tgacaaaaac	agttattaaa	7200
50	gatggcaaaag	atggtagaga	tggacgtgat	ggtcgagacg	gcaaagacgg	taaagatgga	7260
	aaatgtggat	gccaaagaaa	accagtaaca	ccatcaaatg	acaaaccagt	tcctccaaca	7320
	ccaaatgtgc	cgacaccaga	agtaccgggt	aaacctgtgc	cagcgcaacc	aacaccaaat	7380
	gtaccgacac	cagaagtgcc	agtacaacca	actccagctg	tttcaacacc	agaagtaccg	7440
	gttaaaccag	taccagcggt	tccagaacaa	ccagtagtac	caacaccggc	tcaaccagca	7500
55	actccagtaa	atgctaacc	agtagcacca	actacaggt	aagaaaaccg	tggggacaaa	7560
	ttacctgaaa	ctggaagcca	atctgattat	atctctgttc	ttttaggtag	cggtattcta	7620
	ttgagcctat	atgtaggacg	aagaaaagaa	gattaa			7656
	<212> Type : DNA						
	<211> Length : 7656						
60	SequenceName : SEQ ID 747						
	SequenceDescription :						
	Sequence						
	-----						
65	<213> OrganismName : Streptococcus pneumoniae R6						
	<400> PreSequenceString :						
	atgaagaaaa	gaatgttatt	agcgtcaaca	gtagccttgt	catttgcccc	agtattggca	60

actcaagcag aagaagttct ttggactgca cgtagtgttg agcaaatacca aaacgatttg 120  
actaaaacgg acaacaaaac aagttatacc gtacagtatg gtgatacttt gagcaccatt 180  
gcagaagcct tgggtgtaga tgtcacagtg cttgcgaatc tgaacaaaat cactaatatg 240  
gacttgattt tcccagaaac tgttttgaca acgactgtca atgaagcaga agaagtaaca 300  
5 gaagttgaaa tccaacacac tcaagcagac tctagtgaag aagtgacaac tgcgacagca 360  
gatttgacca ctaatcaagt gaccgttgat gatcaaaactg ttcaggttgc agacctttct 420  
caaccaattg cagaagctcc aaaagaagta gcatacaagt cagaagttac aaagacagtg 480  
attgcttctg aagaagtggc accatctacg ggcaacttctg tcccagagga gcaaacggcc 540  
gaaacaagca gtgcagttgc agaagaagct cctcaggaaa cgactccagc tgagaagcag 600  
10 gaaacacaaa caagccctca agctgcatca gcagtgggaag caactacaac aagttcagaa 660  
gcaaaaagaag tagcatcatc aaatggagct acagcagcag tttctactta tcaaccagaa 720  
gaaacgaaaa taatttcaac aacttacgag gcaccagctg cgcccattta tgctggactt 780  
gcagtagcaa aatctgaaaa tgcaggtctt caaccacaaa cagctgcctt taaagaagaa 840  
a:tgctaact tgtttggcat tacatccttt agtggttatc gtccaggaga cagtggagat 900  
15 cacggaaaag gttttggctat cgattttatg gtaccagaac gttcagaatt aggggataag 960  
attgcggaat atgctattca aaatatggcc agccgtggca ttagttacat catctggaaa 1020  
caacgtttct atgctccatt cgatagcaaa tatggggccag ctaacacttg gaaccaatg 1080  
ccagaccgtg gtagtgtgac agaaaatcac tatgatcac ttcacgtttc aatgaatgga 1140  
taa 1143  
20 <212> Type : DNA  
<211> Length : 1143  
SequenceName : SEQ ID 748  
SequenceDescription :  
25 Sequence  
-----  
<213> OrganismName : Streptococcus pneumoniae R6  
<400> PreSequenceString :  
gtgacgattc taggaaaaga tacagttcaa caatctgcga aagggtgaatc tgtaactcaa 60  
30 gaagctacac cagagtataa gctagaaaat acaccaggtg gagataaggg aggcataact 120  
ggaagctcag atgctaatgc gaatgaaggc ggtggtagcc aggcgggtgg atcagctcac 180  
acaggttcac aaaactcagc tcaatcacia gcttctaagc aattagctac tgaaaaagaa 240  
tcagctaaaa atgccattga aaaagcagcc aagaacaagc aggatgaaat caaaggcgca 300  
ccgctttctg ataaagaaaa agcagaactt ttagcaagag tggaagcaga aaaacaagca 360  
35 gctctcaaa agattgaaaa tgcaaaaact atggaagatg tgaaggagc agaaacgatt 420  
ggagtgcag ccattgccat ggttacagtt cctaagagac cagtggctcc taatgctgct 480  
cctaagacaa caagtgacc gcaagcaact gcaggaacaa tgcaagatgt tacctaccag 540  
tcacctgctg gcaacaatt acctaacaca ggttcagcat caagtgcagc acttgctagt 600  
cttggtctag tgggtgcaac aagtggtttt gctttgctag gaagaaagac tagacgtaga 660  
40 aaatag 666  
<212> Type : DNA  
<211> Length : 666  
SequenceName : SEQ ID 749  
SequenceDescription :  
45 Sequence  
-----  
<213> OrganismName : Streptococcus pneumoniae R6  
<400> PreSequenceString :  
50 atgatgacga caggttgctc tatgggagcc tatcatgcac tcaatttctt cctccagcat 60  
ccagatgtct ttaccaaagt gattgctctc agtgggtgtt acgacgcacg tttctttgtc 120  
ggtgattact acaacgatga tgctatttac caaaactcgc cagtagatta tatttggaa 180  
caaaacgacg gctggtttat tgaccgttac cgtcaggcag agattgtgct gtgtacggg 240  
cttgagacct gggaacaaga tggtttgcca tctttttaca agctcaaaga agcctttgac 300  
55 aagaaacaaa ttccagcctg gtttgcgtga tggggacatg atgtcgcca tgactgggaa 360  
tggtggcgta aacaaatgcc ttatttcctc ggtaatctct atttataa 408  
<212> Type : DNA  
<211> Length : 408  
SequenceName : SEQ ID 750  
SequenceDescription :  
50 Sequence  
-----  
<213> OrganismName : Streptococcus pneumoniae R6  
<400> PreSequenceString :  
65 atgaataaag gattatttga aaaacgttgt aaatatagta ttccgaaatt ttcattaggt 60  
gttgcttctg ttatgattgg agctacattc tttgggacaa gtccggttct tgcagatagc 120

	gtgcagtcctg	gttccacggc	gaacttacca	gctgatttag	ctactgctct	tgcaacagca	180
	aaagagaatg	atgggcatga	ttttgaagcg	cctaagggtg	gagaagacca	aggttctcca	240
	gaagttacag	atgggacctaa	gacagaagaa	gaactattag	cacttgaaaa	agaaaaaccg	300
5	gctgaagaaa	aacaaaaaga	ggataaacct	gcagctgcta	aacctgaaac	acctaagacg	360
	gttaaccctg	aatggcaaac	ggtagagaaa	aaagaacaac	agggaaacagt	cactatccga	420
	gaagaaaaag	gtgtccgcta	caaccaatta	tcttcaactg	ctcaaaatga	taacgcaggt	480
	aaaccagccc	tgtttgaaaa	gaaggcgctg	accggtgatg	ccaatggaaa	tgcaactggt	540
	gatttaacct	tcaaagatga	ttctgaaaa	ggcaaatcac	gctttgggtg	cttcttgaaa	600
10	tttaagagata	ccaagaataa	tgtttttgct	ggttacgaca	aggatggctg	gttctgggag	660
	tataaatctc	caacaactag	cacttggtat	agaggtagtc	gtgttgctgc	tcttgaaaca	720
	ggatcaacaa	accgtctctc	tatcactctc	aagtcagacg	gtcagctaaa	tgccagcaat	780
	aacgatgtca	atctctttga	cacagtgact	ctaccagctg	cggtcaatga	ccatcttaaa	840
	aatgagaaga	agattctctc	caaggcgggc	tcttatgacg	atgagcgaac	agttgttagc	900
	gttaaaacgg	ataaccaaga	gggggtaaaa	acagaggata	ccccctgctg	aaaagaaaca	960
15	ggctcctgaag	ttgatgatag	caaggtgact	tatgacacga	ttcagctctaa	ggttctcaaa	1020
	gcagtgattg	accaagcctt	ccctcgtgtc	aaggaataca	gcttgaatgg	acatactttg	1080
	ccaggacagg	ttcaacagtt	caaccaagtc	tcttatcaata	accaccgaat	caccctgaa	1140
	gtcacttata	agaaaatcaa	tgagacaaca	gcagagtact	tgatgaagct	tcgcatgat	1200
	gctcacttaa	tcaatgcgga	aatgacagta	cgcttgcaag	ttgtggacaa	tcaatgacac	1260
20	tttgatgtga	ccaagattgt	caaccacaat	caagtcactc	caggtcaaaa	gattgatgac	1320
	gaaagaaaaa	tactttcttc	tattagtctc	ctcggtcaatg	ctttagtctc	tggttctagt	1380
	gatcaaaactg	gtgctaagtt	tgatggggca	accatgtcaa	acaatacgca	tgctagcggg	1440
	gatgatcata	tcgatgtaac	caatccaatg	aaagatctag	ccaagggtta	catgtatgga	1500
25	tttggttcta	cgataaagct	tgctgctggg	gtttggagta	actctcaaaa	cagctatggg	1560
	gggtggttcga	atgactggac	tcgtttgaca	gcctataaaag	aaacagtcgg	aaatgccaac	1620
	tatgtaggaa	tccacagctc	tgaatggcaa	tgggaaaaag	cttataaggg	cattgttttc	1680
	ccagaataca	cgaaggaaact	tccaagtgtc	aaggttggtta	tcactgaaga	tgccaatgca	1740
	gacaagaaaag	tcgattggca	ggatgggtgcc	attgcttatac	gtagcattat	gaacaatcct	1800
30	caaggttgga	aaaaagttaa	ggatatcaca	gcttagccga	tcgcatgaa	ctttggttct	1860
	caagcacaaa	acccattcct	tatgaccttg	gatgggtatca	agaaaatcaa	tctccacaca	1920
	gatggtcttg	ggcaaggtgt	tctccttaaa	ggatatggta	gcgaaggcca	tgactctggg	1980
	cacttgaact	atgctgatat	tggtgaagct	atcggtgggtg	tcgaagactt	caagacccta	2040
	attgagaagg	ctaagaataa	tggagctcat	ctcggtatcc	acgttaacgc	ttcagaaact	2100
35	tatcttgagt	ctaaataactt	caatgaaaaa	attctccgta	agaatccaga	tggaagctat	2160
	agctatgggt	ggaaactggct	agatcaaggt	atcaacattg	atgctgccta	tgacctagct	2220
	catggctcgt	tggcacgttg	ggaagatttg	aagaaaaaac	ttgggtgacg	tctcgacttt	2280
	atctatgtgg	acgtttgggg	taatgggtcaa	acgggtgata	acgggtgcctc	ggctaccac	2340
	gttcttgcta	aagaaattaa	caaacaaggc	tggcgctttg	cgatcgagtg	gggccatggg	2400
40	gggtgagtacg	actctacctt	ccatcactgg	gcagctgact	tgacctacgg	tggtctacac	2460
	aataaaagga	tcaacagtg	catcaccgcg	tttatacgta	accacaaaaa	agatgcttgg	2520
	gtaggggact	acagaagtta	tgggtgggtca	gccaactatc	cactgctagg	tggtctacag	2580
	atgaaagact	ttgaaggctg	gcaagggaaga	agtgactaca	atggctatgt	aactaactta	2640
	tttgcccatg	acgtcatgac	caagtacttc	caacacttca	ctgtaagtaa	atgggaaaat	2700
45	ggtacaccgg	tgactatgac	cgataacggg	agcacctata	aatggactcc	agaaatgcga	2760
	ttgggaattgg	tagatgctga	caataataaa	gtagttgtaa	ctcgtaagtc	aatgatgtc	2820
	aatagtccac	aatatcgga	acgtacagta	actctcaacg	gacgtgtcat	ccaagatggg	2880
	tcagcttact	tgactccttg	gaactgggat	gcaaatggta	agaaactttc	tactgataag	2940
	gaaaagatgt	actacttcaa	tacgcaggcc	gggtgcaaca	cttggaccct	tccaagcgat	3000
50	tggggcaaga	gcaaggttta	cctttacaag	ctaactgacc	aaggttaagac	agaagagcaa	3060
	gaactaactg	taaaagatgg	taaaattacc	ctagatcttc	tagcaaatca	accatacggt	3120
	ctctatcggt	cgaacaaaac	caatcctgaa	atgtcatgga	gtgaaggcat	gcacatctat	3180
	gaccaaggat	ttaacagtg	taccttgaaa	cattggacca	tttcaggcga	tgcttctaag	3240
	gcagaaattg	tcaagtctca	aggggcaaac	gatattgcttc	gtattcaagg	aaacaaagaa	3300
55	aaagttagtc	tcaactcagaa	attaactggc	ttgaaaccaa	ataccaagta	tgccgtttat	3360
	gtcgggtgctg	ataaccgtag	taatgccaa	gcgagcatca	ctgtaaaatc	tggtgaaaaa	3420
	gaagtgacta	cttatacca	taagtctctc	gccctcaact	atgtaaaagc	ctatgccac	3480
	aatacacgtc	gtacagttgac	tacagttgac	gatacaagtt	acttccaaaa	catgtacgcc	3540
	ttctttacaa	ctggatcgga	cgatcaaat	gttactctga	cattgagtcg	tgaagctggg	3600
60	gatgaagcaa	cttactttga	tgaaattcgt	acctttgaaa	acaattcaag	catgtacgga	3660
	gacaagcatg	atacaggtaa	aggcaccttc	aagcaagact	ttgaaaatgt	tgctcagggt	3720
	atcttcccat	ttgtagtggg	tggtgtcgaa	gggtcgaag	acaaccgcac	tcacttgtct	3780
	gaaaaacacg	atccatatac	acaacgtggg	tggaatggta	agaaagtcga	tgatgtttat	3840
	gaaggaaatt	ggctactcaa	gacaaatgga	ctagttagcc	gtcgtaaact	ggttttacaa	3900
65	actattccgc	aaaacttccg	ttttgaagca	ggtaagacct	accgtgtaac	ctttgaatac	3960
	gaagcagggt	cagacaatac	ctatgctttt	gtatgcggta	agggagaatt	ccagtcaggt	4020
	cgctcgtggta	ctcaagcaag	caacttgga	atgcatgaat	tgccaaatac	ttggacagat	4080
	tctaagaaag	ccaagaaggc	aaccttcttc	gtgacaggtg	cagaaacagg	ggatacttgg	4140

```

gtaggatatct actcaactgg aaatgcaagt aatactcgtg gtgattcttg tggaaatgcc 4200
aacttccgtg gttataacga cttcatgatg gataatcttc aaatcgaaga aattacccta 4260
acaggtaaga tgttgacaga aaatgctctg aagaactact tgccaacggt tgccatgact 4320
aactacacca aagagtctat ggatgctttg aaagaggcgg tctttaacct cagtcaggcc 4380
5 gatgatgata tcagtgtgga agaagcgcgt gcagagattg ccaagattga agccttgaag 4440
aatgcttttg ttcagaagaa aacggctttg gtacagatg actttgcaag tcttacagct 4500
cctgctcagg ctcaagaagg tcttgcaaat gcctttgatg gaaacttatc tagtttatgg 4560
catacatcat ggggcgagg agatgtaggc aagcctgcaa ccatggctctt gaaagaagca 4620
actgaaatca ctggacttcg ttatgttcca cgtggatcag gttoaatgg taacttgcgt 4680
10 gatgtgaaac ttgttgtgac agatgagtct ggcaaggagc atacctttac tgcaactgat 4740
tggccagata acaataagcc aaaagacatt gattttggta agacaattaa ggctaagaaa 4800
attgtcctta caggacttaa gacttacgga gatggtggcg ataaatacca atctgcagcg 4860
gaactcatct ttactcgtcc acaggtagca gaaacacctc ttgacttgtc aggcattgaa 4920
gcagcttttg ctaaggctca gaaattaaca gacaaagaca atcaagagga agtagctagc 4980
15 gttcaggcaa gcatgaaata tgcgacggat aacctctctc tgacggaaag aatggtggaa 5040
tactttgcag attatctcaa ccaattaaaa gattctgcta cgaaaccaga tgctccaaact 5100
gtagaaaac ctgagtttaa acttagctct atcaaggtaa gacgccagat 5160
tataagcaag aaatagctag accagaaaca cctgaacaaa tcttgccagc aacagggtgag 5220
agtcaatttg acacagccct cttcctagca agtggttagcc tagccctatc tgctctcttt 5280
20 gtatgtaaaaa cgaagaaaga ctatg 5304

```

<212> Type : DNA

<211> Length : 5304

SequenceName : SEQ ID 751

SequenceDescription :

25 Sequence  
-----

<213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

```

30 atgaaattat ataataaatc agaattacgt tattctcgca ttttctttga taagagacca 60
ccagcttttg cgtttattct cattatttca actgctatta tottaagcgg tgcatgtggt 120
ggcgcagctt atatacccaa aaactatatt gtaaaagcga atggaaattc agtcataaca 180
ggtacagagt tcctatcagc aattagttca gggaaggtag ttactttaca taagtcagaa 240
ggagatatgg taaatgctgg agatgtcatt atttcgttat caagtggaca agaaggttta 300
35 caagcgagct ctttaataaa acaattgggtg aagttacgtg caaaagaagc tatctttcaa 360
aaatttgaac aatcattaaa tgagaatac aaccgtatgt ctaattctgg tgaagaacag 420
gaatattatg ggaaagttag atactaccta tctcagttaa attcggaata ttataataat 480
ggtacccagt attcaaagat tcaggatgaa tatacgaagt tgaataaaat aacagctgaa 540
agaaatcagt tagatgccga cttgcaaaact ctacaaaatg aattgattca acttcaacag 600
40 caaggagact ccccttcctt atcagatacg acatcagctg atgataaagc taagttagaa 660
actaagatat tagaataaac aacaaaaaat gaagcattaa aaacaaatat tacttctaa 720
aatagcgaga ttgatagtca acaaagcaat attaaagata tgaaccgtac ctataatgat 780
ccaacttctc aggcttataa tatttatgct caattagtta gtgagttagg tactgtcgt 840
tcaaacacaa ataaaagtat tacagagctt gaggctaate ttggagtggc aacagggtcaa 900
45 gataaagctc atagtattat agcgccaaat gaaggtactc tgcattattt ggtacctttg 960
aaacaaggaa tgtctattca gcagggggcaa acgatagcag aagtttcagg gaaagaaaaa 1020
ggttactatg tagaagcttt tgtacttgcg agtgatattt ctctgtcttc aaaaggagca 1080
aaagttgatg ttgctattac tgggtgaaat agtcaaaaat atggaacact aaagggacaa 1140
gtcagacaga ttgattcagg aacaatttcc caagaaacga aagaggggaa tattagcttc 1200
50 tataaagtca tgatagaatt agaaacctta actctaaaac atggaagtga gacagtcgtc 1260
ctccaaaagg atatgccagt tgaagtgcgg attgtctatg ataaagaaac ctatcttgat 1320
tggatttttg aaatgttaag tttcaagcaa taa 1353

```

<212> Type : DNA

<211> Length : 1353

SequenceName : SEQ ID 752

SequenceDescription :

Sequence  
-----

60 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491

<400> PreSequenceString :

```

atgaataaag gtttacatcg cattatcttt agtaaaaaagc acagcaccat ggttgacgta 60
gcCGaaactg ccaacagcca gggcaaagggt aaacaggcag gcagttcggg ttctgtttca 120
ctgaaaactt caggcgacct ttgcggaaca ctcaaaacca cccttaaaac cttgggtctgc 180
65 tctttgggtt ccttgagtat ggtattgctt gccatgccc aaattaccac cgacaaatca 240
gcacctaaaa accagcaggt cgttatcctt aaaaccaaca ctgggtgccc cttgggtgaat 300
atccaaactc cgaatggagc cggattgagc cacaaccgct atacgcagtt tgatgttgac 360

```

	aacaaagggg	cagtgttaaa	caacgaccgt	aacaataatc	cgtttctggt	caaaggcagt	420
	gcgcaattga	ttttgaacga	ggtagcgggt	acggctagca	aactcaacgg	catcgttacc	480
	gtaggcgggtc	aaaaggccga	cgtgattatt	gccaaaccca	acggcattac	cgttaatggc	540
5	ggcgggttta	aaaatgtcgg	tgggggcatc	ttaaactatcg	gtgcgcccc	aatcggaaca	600
	gacgggtgcac	tgacaggatt	tgatgtgcgt	caaggcacat	tgaccgtagg	agcagcagg	660
	tggaatgata	aaggcggagc	cgactacacc	gggggtacttg	ctcgtgcagt	tgctttgcag	720
	gggaaattac	agggtaaaaa	cctggcgggt	tctaccgggtc	ctcagaaagt	agattacgcc	780
	agcggcgaaa	tcagtgcagg	tacggcgacg	ggtagcaaac	cgactattgc	ccttgatact	840
10	gcccactggg	gcggtatgta	cgccgacagc	atcacactga	ttgccaatga	aaaaggcgta	900
	ggcgtcaaaa	atgccggcac	actcgaagcg	gccaaagcaat	tgattgtgac	ttcgtcaggc	960
	cgattgaaa	acagcggccg	catcgccacc	actgccgacg	gcaccgaagc	ttcaccgact	1020
	tatctctcca	tcgaaaccac	cgaaaaagga	cgggcaggca	catttatctc	caatgggtgg	1080
	cggatcgaga	cgaagggtt	attgtttatt	gaacgggag	aagatatcag	cttgcgtaac	1140
	ggagccgtgg	tgagagaata	cggcagtcgc	ccagctacca	cggtattaaa	tgctgggtcat	1200
15	aattttggtga	ttgagagtaa	aactaatgtg	aacaatgcc	aaggctcggc	taatctgtcg	1260
	gccggcgggtc	gtactacgat	caatgatgct	actattcaag	cgggcagttc	cggttacagc	1320
	tcacccaag	cggatctgta	attgggtgaa	aatcacccga	tatttgctga	aaacgtaacc	1380
	gtattatcta	acggtagtat	tggcagtgct	gctgtaattg	aggctaaaga	cactgcacac	1440
	attgaatcgg	gcaaaccgct	ttcttttagaa	acctcgacgg	ttgcctccaa	catccggttg	1500
20	aacaacggta	acattaaagg	cggaaagcag	cttgctttac	tgccagacga	taacattact	1560
	gccaaaacta	cgaatctgaa	tactcccgcc	aatctgtatg	ttcatacagg	taaagatctg	1620
	aattttgaatg	ttgataaaga	tttgtctgcc	gccagcatcc	atttgaaatc	ggataacgct	1680
	gcccataatta	ccggcaccag	taaaacccctc	actgcctcaa	aagacatggg	tggtggaggca	1740
	ggcttgctga	atgtttacaa	taccaatctg	cgtaccaact	cggttaattct	gcacattcag	1800
25	gcagccaaag	ggaataattca	gcttcggaat	acgcagccaa	ggctctcgaa	1860	
	accaccgcat	tgacgggcaa	tatcgtttca	gacggccttc	atgctgtttc	tgacagcgg	1920
	catgtatcct	tattggccaa	cggtaatgcc	gactttaccg	gtcacaatac	cctgacagcc	1980
	aaggccgatg	tcaatgcagg	atcggttggt	aaaggccgtc	tgaaagcaga	caataccaat	2040
	atcacttcac	cttcaggaga	tattacgttg	gttgccggga	acggtaattca	gcttggtgac	2100
30	ggaaaacaac	gcaattcaat	caacggaaaa	cacatcagca	tcaaaaacaa	cggtggtaat	2160
	gccgacttaa	aaaaccttaa	cgtccatgcc	aaaagcgggg	cattgaaatc	tcattccgac	2220
	cgggcattga	gcatagaaaa	taccaagctg	gagtcctacc	ataatacaga	tcctaatgca	2280
	caacacgagc	ggtaacgct	caaccaagta	gatgcctacg	cacaccgtca	tctaagcatt	2340
	accggcagcc	agatttgcca	aaacgacaaa	ctgccttctg	ccaacaagct	ggtgggtaac	2400
35	ggtgtattgg	cactcaatgc	gcgctattcc	caaattgccc	acaacaccac	gctgagagcg	2460
	ggtgcaatca	accttactgc	cggtagccgc	ctagtcaagc	gcccgaacat	caattggagt	2520
	accgtttcga	cccaatcttt	ggaagataat	aaccattggc	cggacggctg	2580	
	aatattgaag	caggtagcgg	cacattaacc	atcgaacctg	ccaaccgcat	cagtgcgcac	2640
	accgacctga	gcatacaaac	aggcggaaaa	ttgctgttgt	ctgcaaaagg	aggaaatgca	2700
40	ggtgcgccta	gtgctcaagt	ttcctcattg	gaagcaaaag	gcaatatccg	tctgggttaca	2760
	ggagaaacag	atttaagagg	ttctaaatct	acagccgcta	aaaacttggt	tgtcgccacc	2820
	accaaaggca	agttgaatat	cgaagccgta	aacaactcat	tcagcaatta	tttctctaca	2880
	caaaaagcgg	ctgaactcaa	ccaaaaatcc	aaagaattgg	aacagcagat	tgccgagttg	2940
	aaaaaaagct	cgcctaaaag	caagctgatt	ccaaccctgc	aagaagaacg	cgaccgtctc	3000
45	gctttctata	ttcaagccat	caacaaggaa	gttaaaagta	aaaaacccaa	aggcaaaaga	3060
	tacctgcaag	ccaagctttc	tgacacaaat	attgacttga	tttccgcaca	aggcatcgaa	3120
	atcagcgggt	ccgatattac	cgcttccaaa	aaactgaacc	ttcacgccc	aggcgtattg	3180
	ccaaaggcag	cagattcaga	ggcggctgct	attctgattg	acggcataac	cgaccaatat	3240
	gaaattggca	agcccaccta	caagagtcac	tacgacaaag	ctgctctgaa	caagccttca	3300
50	cgtttgaccg	gacgtacggg	ggtaagtatt	catgcagctg	cggcactcga	tgatgcacgt	3360
	attattatcg	gtgcataccg	aatcaaagct	ccctcaggca	gcatagacat	caaagcccat	3420
	agtgatattg	tactggaggc	tggaacaaac	gatgcctata	ccttcttaaa	aaccaaagg	3480
	aaaagcggca	aaatcatcag	aaaaaccaa	tttaccagca	cccgcgacca	cctgattatg	3540
	ccagcccccg	tcgagctgac	cgccaaagg	atcacgcttc	aggcaggcgg	caacatcgaa	3600
55	gctaatacca	cccgtttcaa	tgccccctga	ggtaaaagta	ccctgggttg	gggtgaagag	3660
	ctgcaactgc	tggcagaaga	aggcatccac	aagcacaggt	tggtgtcca	aaaaagccgc	3720
	cgctttatcg	gcatacaagg	aggtaagagc	aattacagta	aaaacgaact	gaacgaacc	3780
	aaattgcctg	tccgcgtcgt	gcgccaaact	gcagccaccc	gttcaggctg	ggataaccgt	3840
	ctcgaaggta	ccgaattcaa	aaccacgctg	gccggtgccc	acattcaggc	agggtgtagg	3900
60	gaaaaagccc	gtgtcgatgc	gaaaattatc	ctcaaaaggca	ttgtgaaccg	tatccagtcg	3960
	gaagaaaaat	tagaaaaccaa	ctcaaccgta	tggcagaac	aggccggacg	cggcagcact	4020
	atcgaaacgc	taaaactgcc	cagcttcgaa	agccctactc	cgcccaaat	gtccgcaccc	4080
	ggcggctata	tcgtcgacat	tccgaaaggc	aatctgaaaa	ccgaaatcga	aaagctgtcc	4140
	aaacagcccg	agtatgccta	tctgaaacag	ctccaagtag	cgaaaaacat	caactggaat	4200
65	caggtgcagc	ttgcttacga	cagatgggag	tacaaaacag	agggtttaac	cgaagcagg	4260
	gcggcgatta	tcgcaactgg	cggttaccgt	gtcacctcag	gcgcaggaa	cggagccgta	4320
	ttgggattaa	acgggtgcgg	cgccgcgcga	accgatgcag	cattcgccctc	tttggccagc	4380



```

caggcttccg tategttcat caacaacaaa ggcgatgtcg gcaaaaccct gaaagagctg 4440
ggcagaagca gcacgggtgaa aaatctgggtg gttgccgcgg ctaccgcagg cgtagccgac 4500
aaaatcggcg cttcggcact gaacaatgtc agcgataagc agtggatcaa caacctgacc 4560
gtcaacctag ccaatgccccg cagtggccga ctgattaata ccgccatcaa cggcggcagc 4620
5 ctcaaagaca acctgggcca tgccgcactg ggtgcgatag tcagtaccgt acacggagaa 4680
gtagcgagca aaatcaaatt taatctcagc gaagactaca ttaccacaa gattgcccac 4740
gccatagcgg gctgtgcggc agcggcgggc aataagggtg agtgtcagga tgggtgcgatc 4800
ggtgcggctg tgggcgagat agtcggggag gctttgacaa acggcaaaaa tcctgccact 4860
10 ttgacagcta aagaacgcga acagattttg gcatacagca aactgggtgc cggtagcgta 4920
agcgggtgtg tcggcgccga tgtgaataca gcggcgatg cggctaaagt cggcattgaa 4980
aataacctat tatctcaaga agagtatgct cttagagaaa aattgatcaa aaaagccaaa 5040
gggaaaggcc tattatcttt agattggggc agcctgaccg aacaaggaggc aaggcagttt 5100
atctatttga ttgagaaaga tcgatatctt aatcaattgc ttgaccgata tcaaaaaaat 5160
ccaagtgtt taaatgaatca agaaaaaaat attcttgcac attttatata ccaaacctct 5220
15 ggaggttaaca cagcttgggc agcttcgata ctgaaaacgc cccagtcagt gggtaatctc 5280
actattcctt ccaagatat taataacacc ttatcgaaag cctatcaaac attgagtcgt 5340
tatgattctt ttgattacaa atcagctgtt gcgcacacaa ctgcacttta cttattaaac 5400
ggacgcgttg gcttcagtgat caaagcagct actgtggcag caggaggata taacattgga 5460
caggagcgga aagcaatctc taatggagaa tatctgcacg gtacagttca ggttggtaat 5520
20 ggcacattga tgggtgcagg atctgtatct gcacaggctg caatatcggc caagcctgca 5580
cctgtttacc gttatctgag caatgacagt gctcctgctt taagacaagc ttttaactgt 5640
gaaagccaga gaatccgcac gaaactgcgc gaagagtatc gacaaatagg gaatcttgcg 5700
atagcaaaaa ttgatgttaa aggattaccg caaaggatgg aagcatttag ttctttccaa 5760
aaaggggaac atggatttat ttctgtacct gaaacaaaaa tttttaaac tatatctgtt 5820
25 gataaatatc ataattatgc ctctcctcct agaggaaacat taagaaatat agatggagaa 5880
tataaattac ttgaaactat agcacagcaa ctcggaataa atcgtaatgt atcaggtaga 5940
attgatctat ttacagaatt aaaggcctgt caatcttgca gcaatgttat tttagagttt 6000
agaaatcgct atccaaatat tcaattaaat atttttacag gaaaatag 6048
<212> Type : DNA
30 <211> Length : 6048
SequenceName : SEQ ID 753
SequenceDescription :

Sequence
-----
35 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atggacttaa tccaaacccc gaataagcaa tttgtcgacg ggcaccgcgg cagcccggt 60
actcccgtac ccgcattggtg gctgaaccag ttacaaggcg agttgtacag catttttaaac 120
40 gcggttggca ttgagcctaa caaagccgac catgcccaag tcttatcggc cattaataacg 180
ttggccgccc actcttcgca ggttgccagt atcgatgtc tgcgtaaata cagcggcaca 240
ggctatgtga acgtcaacgc cttatcacgc aatacaacag tgggcggcgg cgtgtttgtg 300
gcggataaag ccgataaatc taccgctgat aacggctgta ccgttatgt ttctaccgac 360
ggcagcgctt ggaagcgtgt gttttcaggg atgcttaacc tgcattgatt tggatatgtg 420
45 gccagcaaaa acaatgcact atccactttg atgcccgtg aatctgcccg gcttgacgta 480
gtttgtgatt gcttgggttt gtcaattgat acgggtaata tctaccgca aaaaaacaaa 540
tacacaaacg gcaagtttgt gattaacggc aaaactgtcg atgttcaata ccagcctatc 600
agaagcggta tcggtcgatt catctccgga actggtgcag cagccaacct caaatcgaat 660
gaatggactg gcgcgggttt aatcgttatt ggcgaggcg caatggagca gatggagaaa 720
50 tgtgtttcct caatcgctat tggcgaccgt gcgcagggtt tttctaaagt aagcagggac 780
aacatcgcca ttggggccga cagcctgatt aatgtgcagg ccgctactga atggtacgac 840
cagtcacgca tgggaaggcac gcgcaacatc ggtattgggt gtaatgcagg acgcggcatc 900
accagcgggt actctaattg gtcaatcggg cgcaatgccg gacagggatt gggtagaaggc 960
tcgtcaaaata ttgcacttgg cgcaggcgcg atggctggta ctgctccagt cgggttttagt 1020
55 ggcgacattg aagttttttg gccgtcttcg acctcaagaa caatcgcaat cggcgaggct 1080
gtctttgcaa catatcaggg ccgcgcgcgt caaacgcgaa ttggtgccaa tgcggcgcg 1140
aatacaaaaa aggcgaaaaa agttaccgca atcggttctg ccgcgatgga gaatcttgag 1200
cgaaaccgcg ccccaaatgg cggagatgtt gtctggacgg gaacggaagc aggtacctac 1260
gccaatctg gaaaaaacat cacgcttaca tttcccaaca ttcgcggtgc gcaagcgact 1320
60 tattgggtgg gcatccgcct tacatcaggc acggcgcaaa ccttacaaaa cgacgtcgta 1380
ccggctcagg tcgtatcagt gaatggcaat acattaatca tccaaagctc aaaagagctg 1440
accgccaccg gcgcggccga actgaaatac gtttattctg taaattcaac cgctactaaa 1500
aacgaagagt tgaccatcat cggcgcgcaac gccatgaata aggcattgac cgcaggatag 1560
tcaactatca tcggcgtaga tgccgcgttg ttgggagaca attatcaaaa aacaaccgca 1620
65 atcggcgcat catcttttac aacaggtagt catatttcca caactgctat tgggtattgg 1680
gtaatccctt tggcaagtgt ttgacaaatg gttgccattg gagatagtg gggctatcgg 1740
aacgtttcaag gcgacttttt gactgggaaa ataacaaact ccacgcgat cggatatggc 1800

```

```
gcaagaataa acggcgataa cgaaatccaa atcggtagca cagggcaaac tttatatgct 1860
ccaaccgcgg tgaacatccg ttctgacggc cgcgacaaag cagatgttaa gccgttgacg 1920
aacggtttag atttttgaat gaagctcaag ccgatgactg gctactacga ccgccgggat 1980
tcctacgttg acgaattatt caaagacttg ccggcagatg aacgagcggg caaagtccgc 2040
5 gaatgggtgg cgaaatocaa caaggacggc agtcataaag aagatcgggt gcggcattgg 2100
tttattgccc aggacattgc tgcgctggaa gatgaatatg gtcgattgcc gatggtaaat 2160
aaaacaaacg atacctacac cgtcgaatac gaaacgttca tccccgtttt gactaaagcc 2220
attcaggaaa tggccgcaag aattgaaaca ttagaaaccg aatgaagga atcgaaaaaa 2280
tga 2283
10 <212> Type : DNA
    <211> Length : 2283
        SequenceName : SEQ ID 754
        SequenceDescription :

15 Sequence
-----
    <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
20 atgaaaaata tctcacgcaa atgctttatg accagtgtgg tatgtattat tctaggaggc 60
   attctcttag gggctggcta tgcaactgga ggacttcagg acattaaaca ccaaacagct 120
   cccaaaaagg tcatcaaaac atttgaccaa ataactgctc ttgatattga cagttctgcc 180
   tcaactatta cagtagagac aggaccggtt caaagaccaa cagtgcacta ttacacacat 240
   cctaaattta ttgaccttat cgtcacaaca ttaacaggta agaccctatc tctttcgcaa 300
   aaaccctaaag acattgtcat cactgggtga attgaaattt taggttttac tctcaataat 360
25 agtcgtcaag agaagaacta ccgttctatt accattactg ttctgaaaa aactagcctc 420
   aatgaagtta agggaagtaa tgtccacat accactttgt caaatctaac tgtccaagat 480
   atgcaattcg atggcaatct tactctttta cataccaaag tcaagaaagc tactatcact 540
   ggtatgttgg aagccactaa aagtcagta acaaactcgc agttaaagc tgactattct 600
   ttttcaaacc tgactgattc tagtgtggaa aatgggacca tcagcttagg aaatggacaa 660
30 ctaactacta aagataccac tctaaaagcc atcaatattc aatcattaca ccctggcggg 720
   atagaagccg agagaacaac ccttgaaaat gtgaccttca ctgtttctaa aagcaaaagaa 780
   gaagaagagg agaacgacta ctatgacaat gatgctatct tcaccgtca tgcctttacc 840
   cttaaaggga ctaatactat tagtgggtgt gatattgatg ttgacataac cttgacaaaa 900
   gcaaaggcca tcgcctacag ggcaaggacc gaaaatggta aagtctccct tggctcacag 960
35 ctgacaccag ctaagattgg taaggaatca acttcagatg ttatttctta tgtggctgag 1020
   aataaagcag ctactggaaa tttaacggtt aatctcaata agggagacat tactatcaaa 1080
   tga 1083
    <212> Type : DNA
    <211> Length : 1083
40 SequenceName : SEQ ID 755
   SequenceDescription :

Sequence
-----
45 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
   atgtttaaga aagaaaattt aaaacaacgt tattttaatt ttggattagt agcgttagct 60
   ctaacaatat tagccatcat ttttgccttc tcaagtaaaa atgctgatac taagtcttat 120
   gctaagaagt cagaaagtaa aatggtaaca atcgacaagg ctccaaaaaa taatcatgct 180
50 attactaaag aagaaagcaa agaaaaagca aagagcattg cttcggagcc tattccaca 240
   gtagaaaact ctgtagctcc gacagtaaca gaggaagcac cggttgttca gcaagaagtg 300
   actcaaaactg ttcagcaggt atcttcagta gcctataatc caaataatgt ggtactttcc 360
   aatggaaata ctgctggtat tgtaggaagt caagcggcgg cacagatggc agcagcaaca 420
   ggtgttccac aatcaacttg ggaacatata attgcgcgtg aatctaattg aaatcctaac 480
55 gcagctaatt cttctggggc atcagggttg ttccagacaa tgccagggtg gggttctaca 540
   gcaacggttg aagatcaagt caatgcagcc ttgaaagcct atagtgcaca aggtttatca 600
   gcttgggggt actaa 615
    <212> Type : DNA
    <211> Length : 615
60 SequenceName : SEQ ID 756
   SequenceDescription :

Sequence
-----
65 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
   atgttagaag aattgaaaac acttattaaa aatccaaaat taatgattac aatgattggt 60
```

	gtggccctag	tgccctgcctt	atataattta	tcctttctag	gctcaatgtg	ggatcccttat	120
	ggtcgggtca	atgaccttcc	cattgtctgtt	gttaatcatg	ataagcctgc	aaagagagct	180
	gataagtcatt	tgacaattgg	gaatgatatg	gtggacaaga	tgtctaaaag	taaagatttta	240
5	gactatcatt	ttgtatcttc	aaaaagtgct	caaaaaggctc	ttaaaaaagg	tgattatttat	300
	atggtcattta	ctttaccgga	agatctttct	cagcgagcaa	caaccttatt	aaatcccgaa	360
	ccccaaaaac	taactatccg	ttaccaaaact	agtaaaaggac	atggaatggg	cgctgctaag	420
	atgggggaaa	cagcgatggc	taagctgaaa	gagtcctgtt	cgcaaaacat	tacgaagact	480
	tatacctcag	cagtttttag	cagtatgaca	gacctccaat	caggattaaa	agaagcctca	540
	actggtagtc	aagcattgga	ttcaggagcg	aagacagccc	aaatgggtag	tcaaatgctc	600
10	tcagataact	tagcagggtt	atctagtgct	agttggcaat	ttcaacaagg	aactaatcgt	660
	ttaaacttcag	gattaacggc	ctatacagct	ggtgttagtc	aagtaaaagg	cggactaggg	720
	cagctctcaa	ccgatatgcc	agtttacctg	aatgggggtt	ctcgggttatc	acaaggagct	780
	tctcaactta	ttcagggtct	ttcacagttg	acacaatcaa	caacactttc	tgatgataaa	840
	gctaaaagaa	tccaatcttt	ggaggtagta	ttaccagttt	taaatcaagg	tattcagcaa	900
15	ctaaatgaaa	atctctcaac	gatgcaggta	ccaaaactta	ataccgatga	gttaggggaat	960
	aacttggtctg	ccattgtctca	agctgcgcaa	cagttacttg	ttaaagaagc	tgctgctcac	1020
	aaggaactaa	tgccgggagc	acaagccact	agcgcttatc	agtcactaac	tgctgagcaa	1080
	caaggggaat	taactgctgc	tcttacccaa	actgataagg	gtgaagctgt	ggctcctgct	1140
	caaacgattt	taaggtctgt	tcaaaccttg	tcaacaagtt	tacagtctct	ctctcaagaa	1200
20	gatcagctca	aacagttgga	gcaacttaag	gaagctgttg	cacagattgc	taatcaatcc	1260
	aatcaagctt	tgccgggagc	aagttctgct	ttactgaat	tatcaacggg	attagcaaaag	1320
	gtaaatggta	gcttaaatca	acaagttcta	ccaggaagta	atcaattgac	aacaggatta	1380
	gcacaattaa	acaggtataa	tactgccatt	ggttctgggg	taataaaact	ctcagaaggt	1440
	gccaatgcct	tgctcatcaa	gtccggagaa	ttactagatg	gtagccatca	attatcagaa	1500
25	ggtagcattt	aactagctga	tggtagtctt	caattgagtc	agggtgggtca	tcaattaaacg	1560
	agcggattga	ctgaattatc	aacaggattg	tcaatcttaa	atgggttcctt	agccaaagcc	1620
	tctcagcagt	tatcgcttgt	ttctgtgact	gataaaaaatg	ctaaagctgt	cgcaaaacct	1680
	cttggtgttaa	atgagaaaaga	caaagatggg	gttaagacga	atgggatcgg	gatggcacct	1740
	atggctcctt	tcacagcttt	aatggttggt	gccctttcaa	ccaacgtcat	ttttgctaatt	1800
30	tctttatctg	gtcgtccggt	caaagataaa	tgggattggg	ctaaacaaaa	atttgttatt	1860
	aatgggtttta	tttcgactat	gggatccatt	gttctctact	tagctattca	attattaggg	1920
	tttgaagccc	gttatggtat	ggaaacctta	ggatttatta	tgctaagtgg	ttggacggtt	1980
	atggctcctt	tcacagcttt	ggtcggttgg	gatgatcgat	atggctcctt	tgcttctttg	2040
	ggttatggtat	tgcttcaggt	tggctcttca	ggtggctctt	acccatttga	gttaagtggg	2100
35	gcattttttcc	aaaagttaca	tcctttctta	ccaatgactt	atgtggtatc	tggtttacga	2160
	caaaccattt	cattatcagg	tcatattgga	gtagaagtga	aagtcctaac	tggtttctta	2220
	ctggcattta	tggattatc	actactcatt	tatcgtccca	agaaaacagt	ctaa	2274

&lt;212&gt; Type : DNA

40 &lt;211&gt; Length : 2274

SequenceName : SEQ ID 757

SequenceDescription :

Sequence

45 -----

&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

	atgagcagag	acccaacata	tacaataaac	gagcacgact	tatcttttgc	agatgggtcgt	60
	ttttatgtga	cccttaaggc	agataagtca	agtgcagactg	tgagacttaa	cagtagttgc	120
50	cttggcaata	ccataatcaa	aaagctacag	gtcgaggatg	acaatacaat	gcacgacttt	180
	gtaaagccta	aagttaccac	tcaacaagct	tttgacttag	ctcagcagggt	caaagagctt	240
	gatttacagc	taaaagaccc	taagtcagat	ttgtggggca	aaatcaagtt	caataataag	300
	gcaatgctag	tcgagtacgc	caacaaagag	atgtcaagtg	ccattgcgca	atcagctgag	360
	cagatattgt	tacaagtcaa	gtctattgat	gatgaacgat	attccaaatt	tgagcaaaact	420
55	ctgaatggta	tcaaacaaac	tgtcaaaagt	gagtcagttg	aatccgcacg	tactcagcta	480
	gcataaatgt	ttgatagtgc	tattagtggg	cttgatggca	aatacagtcg	tttgagccaa	540
	acaattgata	gtcttagcag	tcgtcttgat	gatggtgttg	gtaactactc	aacgctatct	600
	caaaaggtaa	gtggcattga	tttacgagtt	agtaattgcag	ctaattgatgt	ttctcgattg	660
	tctcagacag	cacaaggatt	gcagtcacaa	atcacaaatg	caaaccaaaa	ttacagcagt	720
60	ttgtctcaga	ctgtacaggg	actacaacaa	actgtacgtg	ataatcaatc	aaatgctaca	780
	agtcgggatta	atcagttaa	tgacctgatc	agccaaaagg	tatcaaaagg	tgatgttgag	840
	acaactattg	ctcagagtta	cgacaagata	gccttcgcaa	tcagggataa	actccagca	900
	agcaaaatgt	ctggcagtg	gattatctcg	gcaatcaatc	ttgatagggtc	tgggggttaa	960
	atcactggaa	aaaatatcac	tcttgatggg	aacagctaca	tcagcaacgc	tgctatcaaa	1020
65	gatgctcata	ttgctaacat	ggatgcccgt	aagatttaata	ctgggttatct	taatgctaata	1080
	aggattgcaa	ccgaggccat	tactggtgag	aaaattaaga	tggactatgc	cttttttaata	1140
	aaactcactg	ctaacgaggg	atattttagg	acgttggttg	ccaaagacat	cttttgcaaca	1200

	tcagtccaat	ctgtaacact	atcagctagc	aaaattactg	gaggtgtatt	agccgctaca	1260
	aatggggcaa	gtcagtgagg	cctaaataat	gccaatatga	cctttaatcg	agatgccaca	1320
	attaatttta	atagcaaaaa	caatgcctta	gtacgtaaag	atggcacaca	tactgctttt	1380
	gtacatttta	gtaatgccac	accaaaaggc	tatagaggct	cagcgttgta	tgctctatc	1440
5	ggcattacct	catcaggaga	tggcatcgac	agcgttctt	cgggtcgttt	tgccagggcta	1500
	aggtcattta	ggtacgctac	gggatataac	catactgctg	cagtcgacca	aaccgagcta	1560
	tacggtgata	atgtcttgat	tgcatgatgc	tttagcatca	atcaggagatt	taaattttaga	1620
	ccagacaaaa	tggaaaaaagt	gctcgacatg	aacgacttgt	atgctgctgt	agtagcctta	1680
	ggcgcgtgtt	gggggcactt	ggctaacgtc	ggctggaata	ctgctcatag	caatttttaca	1740
10	agtgcgtgta	gtagggaatt	gaataactac	atcactaaaa	tttaa		1785

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1785

SequenceName : SEQ ID 758

SequenceDescription :

15

Sequence

-----

&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

20	atggcagctg	atggtaagg	atgcatactt	gttgacgttg	atggtaagca	ggtaaaggta	60
	ctcaatagtg	agtttagata	agttgccaa	cacgggtgaca	aaggcagctc	ctctcttaaa	120
	aaattttg	ctgggtgcag	agtcctttaa	ttagcttcgg	ctgcagttga	tttggttagt	180
	caatctcttg	gcaaggctat	cacaagattt	gacacgcttg	aaaaatatcc	aagggtcatg	240
	aaagctatgg	ggcatagcgc	tgaggatggt	gctagatcaa	ctgataagtt	agcgaacgga	300
25	attgatggac	taccaacaac	tttagacgag	gttgctggaa	ccgctcaacg	tttgacctct	360
	attactaagg	atatcaataa	atcaactaat	ctcacactag	cattaaataa	tgctttttta	420
	gcttcaggag	cttcacacga	ggctgcaagc	cgagggctgg	agcaatatgc	ccaaatgcta	480
	tcagctggta	aggttgatat	gcaagcttgg	aaaaccctcc	aagaaacaat	gccttatgcc	540
	ttacaacaaa	ctgcggaagc	ttttggattt	gcaggggcat	cggctcaaaa	ggatttttat	600
30	gaggcggtta	aaaacgggca	aataacattt	gaccaatttt	ctaataagtt	gattgagtta	660
	aatgatggtg	tcggcggttt	tgcaagaacta	gccaaagaaa	atagtaaagg	gattgaaacc	720
	tcttttaaca	acatcaagaa	cgctattgca	aaagggtgtg	ccaatagcat	taaggctttg	780
	gatgatttgt	ctaaggctgc	aacaggtaag	ggcatagctg	atcattttga	tagtttgaaa	840
	gttggttatca	atgcctcttt	tagcgccatc	aatgcaagta	ttaaagctag	tacaccgcta	900
35	tttaaaacttt	tgtttagtgt	tattgggtgct	ggaatatcag	tctgcaaagc	tctgtcgcct	960
	gccttagtgt	gtgtagcatc	tggtctagct	gccggcagg	cagttaatga	gactataaca	1020
	atgattaaag	cgctaaatag	agcttgggtt	atggcatctg	catcaatgag	tattggagca	1080
	acaaccatta	agactgtgac	tgcggtacaa	gcggtaagta	ccacgatgac	taaagcagat	1140
	atgggtgcaa	gactatctca	gttaggtgtc	ttaaaagcca	gtaccgtgat	ttatgggtgt	1200
40	atgtagcgcg	gtgcatgcta	atctactgtt	gcaaccatag	ccagtactgc	tgccgtaact	1260
	gcgttaaaag	cagcacttgt	agccttaaca	gggtccggtg	gttgggtagt	tgagagctatc	1320
	ggtgcttttag	ttgctgtcgg	agtaagctta	tggtcatggc	taactaaaga	gtcagacgag	1380
	accaaaaagc	tgaaaaaaga	gcaggagggg	ctagtcgaaa	gcaacaaaaca	gctaagagat	1440
	tctgtccgtg	agggcggtgca	agagcgtaag	agccggccttg	agtccgtcaa	agagagcact	1500
45	gcagctcatc	aaaaattagc	tgacgaaatc	attaagttag	ccgccaaaaga	aaacaaaact	1560
	gcaggcgaaa	aacaaaactt	aaaaaataag	attgatcagc	ttaatgggtc	tattgatggc	1620
	ttaaacttgg	cctatgacaa	aaactccaat	tctctttctc	acaatgcaga	tcaaattaag	1680
	tcacgcatta	gtgccatgga	agcagaaaagc	acatggcaaa	cagcacaaca	aatctgtta	1740
	aatattgaac	agaaaacgtag	cgagggttagc	aaaaagctag	ctgaaaatgc	tgatttgctg	1800
50	aaaaagtgga	atgaagaagc	taacgtctcc	gattccgtcc	gaaaagaaaa	gattgcagaa	1860
	ctcacagaag	aagaagctaa	acttaaaaaat	atgcagactc	aactgcagga	ggagtataac	1920
	aagacatcag	ctactcaaca	agctgctgca	gacgctatgg	ctgccgctga	agaatcagga	1980
	tcagcaagac	aggttatagc	gtacgaaaat	atgtcagaag	ctcaacgaac	tgccatagac	2040
	aatatgcgca	ctaagtactc	tgaactttta	gagacaacga	catctatttt	tgatgctata	2100
55	gaacaaaaga	cggcattatc	agtagatcaa	atgaatacca	accttgaaaa	aaatagagct	2160
	gctactgaac	agtgggctac	taatttggag	attttggctc	agcgtgggtg	ggatcaagg	2220
	attttggagc	aactaagacg	catgggtcct	gaaggagcca	cacagacgca	agtttttttg	2280
	gatgcaacag	atgccgagct	agcacccttg	caggaaaact	ttagagcagc	cacagaaaact	2340
	gctaaaaaat	caatggggag	cgtttttagac	tcagcagggtg	tggaaatgcc	agaaaaagtt	2400
60	aaagggaatg	tcactaatgt	ttctacggga	ttacaggcgg	aactgcaagc	tgctaacttt	2460
	gctcaacttg	gccaagaaat	ccctaattggg	gtttctcaag	gtataagtca	agggggcagg	2520
	aaagcaagtg	acgcaagtgt	caaaatgggt	caagaagtta	aacgctcttt	tcaaggagag	2580
	ttgggtatcc	actcgccatc	gcgagtattt	actgagtacg	gtggccatata	tactgatggc	2640
	ttgagttaat	gtgtgacaaa	tggaaacgtca	aaagtattgc	aaacctatgca	gagcttggct	2700
65	caacagatgt	ctcaaaaagg	acagcagatt	taaatgtgaca	tgcgtagcaa	gtcgaaccac	2760
	atcacagatg	cttttagcac	gatgagtgg	ccaatgcact	ctcatgggtg	taatgccatg	2820
	caagggttgg	ccaatgggtat	ttatgcaggg	tcgggggcag	cttttagcggc	agctcaaaagc	2880

```
attgcgccac gtatcacgc aacaattcaa agtgccttag atatccactc gccatctcgt 2940
gttatgaggg atgaggttgg acgtttttatc cctcagggtg tcgctgtagg tattgatgcg 3000
gatagaaaag tcattgactc atctatgcaa aagctaaaag agtcaatgac gattaatgcg 3060
5 actccagaaa tagcctctgg atttggcgga ggagttgctg ggattgctaa tcagaccaca 3120
aataactcaa ataacagttt tacccttaat gtcaagggtg atgaatccga cggtaatagc 3180
cacgagaaat atcaacgctt attcagagaa tttagctggg atattcaaca acaacaagga 3240
aggttagggt atgttaaatg a 3261
<212> Type : DNA
<211> Length : 3261
10 SequenceName : SEQ ID 759
SequenceDescription :

Sequence
-----
15 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
<400> PreSequenceString :
atggctaag aaccatggga agaaaaaatt gttgatgata ctatagggac acgaacacgt 60
aaatcaagaa atgctttcat tagcacgcct tgggtgactg ctttattaag tgtattcttt 120
gtcatcattg ttgctatact ttttattttc ttctatacat caaatagcgg tagtaataga 180
20 caagctgaaa caaatgggtt ttatggagca tccactcata aaaaaacaag gaaagcttct 240
aacgctaaaa aaacatcaag tagttcaaca actacagaca caacaccttc tagcgaagaa 300
acacttgctt ctagtgaagg aaccggcgaa acccttactg tattggcagg tgagggggca 360
gcttctattg cagctcgtgc aggtatttct gtggagcagt tacaagcact taatccagag 420
cacatgactc aaggatattg gtatgccaat ccaggagatc aagtcactat taaataa 477
25 <212> Type : DNA
<211> Length : 477
SequenceName : SEQ ID 760
SequenceDescription :

30 Sequence
-----
<213> OrganismName : Streptococcus pyogenes strain MGAS8232
<400> PreSequenceString :
35 atgtctaaaa gaggaataat taaaataaca acgaaaacaa agcttattac agctagtgtt 60
ataacgctag tattaattat aactggagta gtcttgtgga aacaacaaca aaatacgtca 120
acagctgata tcgctaaaga accttactct actgttagtg taactgaagg gagtattgct 180
tcttcgactt tactatcagg tactgtaaag gctttatcag aggaatatat ttattttgat 240
gctaataaag gaaatgatgc aactgttaca gttaaaatag gtgatcaggt aacgcagggc 300
40 cagcaattag ttcaatataa tacaacaaca gctcagtcag cttatgatac tgctgttagg 360
agtcttaaca agattggcgg acaaattaat catcttaaaa catacggagt tcctgctgtt 420
agtacagaaa ctaataaaga tgaagctacc ggtgaagaga cgacaacaac agttcaacca 480
tcagctcagc aaaaatgctaa ttataaacag cagctgcaag atttaaatga tgcttatgca 540
gatgcacaag cagaagtaaa taaagcgagc atagcggtta atgatacagt agttatcagt 600
45 agtgctctcg gaactgttgt ggaagtaaat aatgatattg atccttcttc aaagaacagt 660
caaacacttg ttcacgtagc aaccgaagga cagcttcagg tgaaaggaac attgacagag 720
tatgatttag caaacgttaa ggttgggtcaa tctgtaaaaa ttaagtctaa agtttattct 780
aatcaagaat ggactggaaa aatatcatat gtttcaaact atccaactga gtctaattgca 840
ggttcaacaa cgccagcagg tagcactgga gcgggaagtt ctacaggagc tgcctatgat 900
50 tacaagattg atattataag tcctcttaac cagcttaaac aagggtttcac tgtttctgtt 960
gaggttggtt atgaagctaa acaggcctta gttcctttta cggctgttat taagaaagat 1020
aaaaaac'act atgtttggac ttatgatgat gctactggca aagccaaaaa agtagaggtg 1080
acacttggaa acgcagatgc acaacaacaa gaaattcata aaggagtagc tgttggtgac 1140
attgttattg ccaatccaga taaaaatatc aaaccggata aaaaactaga aggggttatt 1200
55 tcaataggta ccaacacaaa accggaaaaa gattctcaat caaagaataa aaaatcaggg 1260
gtggataaat ag 1272
<212> Type : DNA
<211> Length : 1272
SequenceName : SEQ ID 761
SequenceDescription :

60 Sequence
-----
<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols
65 <400> PreSequenceString :
gtgctccgct tgccaactgc gcgcgcgtgc attacaatgg gcaccatgat cagacatata 60
tttacgcata ggtgcggagc gctcctgtgc gcgctggcgt tgggaagctc cactatggct 120
```

```

5  ggcaccgccc ctgcaaaacc caagaaaggg caaatgcaga aattgcggca gcggccggtg 180
   tgggcgcccc ccggcggggc gtatgcgtct ttggacggtg cgtttaccgc gctggcaaat 240
   gatgcaagtt tctttgaggg aaatccggca ggaagtgcga acatgacgca cggggagctg 300
   gctttcttcc ataccactgg ctttggtcgc ttacacgccc aaacgctctc ttacgttggc 360
   cagtccggga actggggata cggcgcgtcg atgcgtatgt tttccctga atctgggttt 420
   gacttttcta ccaccacgga gcccggtgtc acacctgctt cgaaccccat taagcagcgc 480
   ggggcaattg gaatcatcaa ctttgcccgg cgtatcgag gtctctccct gggagccaac 540
   ctgaaggcgg gggtccgcga cgcgcagggc ctgcagcaca cctctgtctc cagtgcacac 600
   gggttgaggt cgggtgggaa cgttgccaag tcctttacct ctgaagagcc caacctgtac 660
10 atcgggcttg cggccaccaa cttgggattg accgtaaagg tctcggacaa gatagagaac 720
   tgcacgagta cctgtgaaaa gtgtgggttc tgcaaggaga ggtgctgctg caacggcaag 780
   aaggcgtgct gcaaggactg cgactgtaac tgcccctgtc aggactgcaa cgacaaaggt 840
   acggtgcacg caacagacac catgctgcgt gcagggtttg cataccggcc cttcagctgg 900
   ttctctttta gccttggtgc caccaccagc atgaatgtgc agacctggc tagtagtgac 960
15 gccaaagtgc tgtaccagaa cctggccttac agcataggcg ccatgtttga tcccttcagc 1020
   ttctctgagc tgagttcgag cttccgcac acaccacaagg ctaacatgag agtgggagtg 1080
   ggtgcagagg cgcgcattgc ccgcattaa ctgaacgcgg gataccgctg tgacgtcagc 1140
   gacatcagca gtgggagtg gtgcacaggg gcgaaggctt cgcactacct ttccttgggt 1200
   ggcgcgatac tgctcggccg aaatttaa 1227

```

```

20 <212> Type : DNA
   <211> Length : 1227
       SequenceName : SEQ ID 762
       SequenceDescription :

```

## 25 Sequence

-----

```

   <213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols
   <400> PreSequenceString :
30 atgagcagaa cgttccgcgc gtggcagtcg gtgtgtgcgc tgtgtgcgct ctctcccctg 60
   ctgcctgcct acagctccga gggcgtgcga gaggtacccc cctcccagtc tccgcagggtg 120
   gtgtgtggcg acgagcccat tcgcccggg gatcagctgc tcaaaattgg cattgttgca 180
   ggctgccagt tgtacatagc agggggaaat ggaaccaacg gctcttcgag ttccggcacc 240
   aacggtaacg gcaacggcaa actgctcggg ggcggggggt ttcacctcgg gtacgagtat 300
   ttttttacca aaaacttttc cctcggcggg caagtttcct ttgagtgtta ccgcacgacc 360
35 gggtcaaact attacttttc tgttcccatc acggtaaacc ccacgtacac gtttgccgta 420
   gggcgctggc gcataccgct ctcctcgggc gttgggctca acattcagtc ctatctcagc 480
   aagaaggcgc cggggccttat tgcggaagcc agcgcggggc tctactacca gtacaccccg 540
   gactgggtcca tcggcgccat tgttgccctac acgcagcttg gggacattgc aagctcccc 600
40 gacaagtgca gagccgtggg ccttgccacc attgactttg ggggtgcgta tcacttttag 660

```

```

   <212> Type : DNA
   <211> Length : 660
       SequenceName : SEQ ID 763
       SequenceDescription :

```

45

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number  
**WO 2005/076010 A3**

(51) International Patent Classification:

G06F 19/00 (2006.01) G01N 33/68 (2006.01)

(21) International Application Number:

PCT/IN2005/000037

(22) International Filing Date: 7 February 2005 (07.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

173/DEL/2004 6 February 2004 (06.02.2004) IN  
60/589,227 20 July 2004 (20.07.2004) US

(71) Applicant (for all designated States except US): COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH [IN/IN]; Rafi Marg, 110 001 New Delhi, Maharashtra (IN).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SACHDEVA, Gaurav [IN/IN]; Institute of Genomics and Integrative Biology, Mall Road, Dehli 110 007 (IN). KUMAR, Kaushal [IN/IN]; Institute of Genomics and Integrative Biology, Mall Road, Dehli 110 007 (IN). JAIN, Preti [IN/IN]; Institute of Genomics and Integrative Biology, Mall Road, Dehli 110 007 (IN). BRAHMACHARI, Samir, Kumar [IN/IN]; Institute of Genomics and Integrative Biology,

Mall Road, New Delhi 110 007 (IN). RAMACHANDRAN, Srinivasan [IN/IN]; Institute of Genomics and Integrative Biology, Mall Road, Dehli 110 007 (IN).

(74) Agents: BHOLA, Ravi et al.; K & S Partners, 84-C, C6 Lane, Off Central Avenue, Sainik Farms, New Delhi 110 067 (IN).

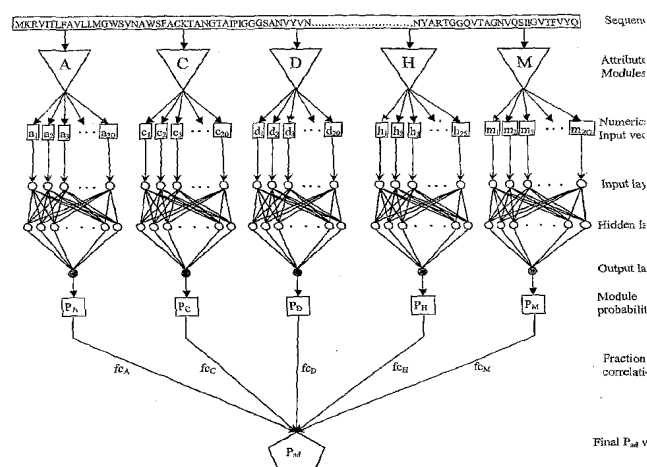
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: COMPUTATIONAL METHOD FOR IDENTIFYING ADHESIN AND ADHESIN-LIKE PROTEINS OF THERAPEUTIC POTENTIAL

The Neural Network architecture



(57) Abstract: A computational method for identifying adhesin and adhesin-like proteins, said method comprising steps of computing the sequence-based attributes of a neural network software wherein the attributes are (i) amino acid frequencies, (ii) multiplet frequency, (iii) dipeptide frequencies, (iv) charge composition, and (v) hydrophobic composition, training the artificial neural Network (ANN) for each of the computed five attributes, and identifying the adhesin and adhesin-like proteins having probability of being an adhesin ( $P_{ad}$ ) as  $\geq 0.51$ ; a computer system for performing the method; and genes and proteins encoding adhesin and adhesin-like proteins.



**Declaration under Rule 4.17:**

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

27 April 2006

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*



# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IN2005/000037

A. CLASSIFICATION OF SUBJECT MATTER  
G06F19/00 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
G06F G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZUEGGE J ET AL: "Deciphering apicoplast targeting signals - feature extraction from nuclear-encoded precursors of Plasmodium falciparum apicoplast proteins" GENE: AN INTERNATIONAL JOURNAL ON GENES AND GENOMES, ELSEVIER, AMSTERDAM, NL, vol. 280, no. 1-2, 12 December 2001 (2001-12-12) , pages 19-26, XP004313161 ISSN: 0378-1119 the whole document ----- -/--	1-13, 18-21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### ° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

11 November 2005

Date of mailing of the international search report

10.01.2006

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Lüdemann, S

# INTERNATIONAL SEARCH REPORT

Int. Application No  
PCT/IN2005/000037

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BRADLEY PHIL ET AL: "BETAWRAP: Successful prediction of parallel beta-helices from primary sequence reveals an association with many microbial pathogens " PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 98, no. 26, 18 December 2001 (2001-12-18) , pages 14819-14824, XP002350912 ISSN: 0027-8424 the whole document	1-13 , 18-21
A	FINLAY R BRETT ET AL: "Common themes in microbial pathogenicity revisited" MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS, vol. 61, no. 2, 1997, pages 136-169, XP002350913 ISSN: 1092-2172 the whole document	1-13 , 18-21
P,X	SACHDEVA GAURAV ET AL: "SPAAN: a software program for prediction of adhesins and adhesin-like proteins using neural networks" BIOINFORMATICS (OXFORD), vol. 21, no. 4, 15 February 2005 (2005-02-15) , pages 483-491, XP002350914 ISSN: 1367-4803 the whole document	1-13 , 18-21
E	WO 2005/057464 A (COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH; BRAHMACHARI, SAMIR, KUM) 23 June 2005 (2005-06-23) the whole document	1-13 , 18-21

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IN2005/000037

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 18-21

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims 1-13, 18-21

A computational method for identifying adhesin and adhesin-like proteins comprising the steps of claim 1.

---

Invention 2-275: claim 14

A set of 274 annotated genes encoding adhesin and adhesin-like proteins, having seq. id nos. 385 to 658.

---

Invention 276-380: claim 15

A set of 105 hypothetical genes encoding adhesin and adhesin-like proteins, having seq. id nos. 659 to 763.

---

Invention 381-659: claim 16

A set of 279 annotated adhesin and adhesin-like proteins, having seq. id nos. 1 to 279.

---

Invention 660-764: claim 17

A set of 105 hypothetical adhesin and adhesin-like proteins, having seq. id nos. 280 to 384.

---

### Information on patent family members

International Application No.

PCT/IN2005/000037

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005057464 A	23-06-2005	US 2005136480 A1	23-06-2005